HEAT TRANSFER LABORATORY

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ABSTRACT

An experimental study has been made of the effects of uniform air injection into the turbulent boundary layer flowing on an axial circular cylinder with a nominal free stream velocity of 120 feet per second. The blowing rate parameter divided by the free stream flow rate varied from 0 to 0.00021 while the Reynolds number based on free stream conditions varied from 4.0×10^5 to 10.6×10^5.

The data for velocity profiles were inserted into the momentum equation and the distribution of turbulent shear stress and eddy viscosity was obtained. The correlation of eddy viscosity with both Reynolds number and injection rate was obtained by dividing by the product of the maximum shear stress velocity and boundary layer thickness. Furthermore, the results for the universal velocity profile correlate better when the maximum shear stress velocity is used rather than wall shear stress velocity. When some of the results are compared with previous experiments, the use of the maximum friction factor rather than wall friction factor in the blowing rate parameter produces better correlation between these various experiments.

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NOMENCLATURE

c_f	friction coefficient, $\tau / \frac{1}{2} \rho_\infty u_\infty$
F	$\rho_w v_w / \rho_\infty u_\infty$ - normalized injection rate
R	radius of the model
r	radial distance, R + y
P	pressure
u; u_τ	axial velocity; $u_\infty \sqrt{c_{f_w}/2}$, ft/sec
u^+_{max}	$u/u_{\tau max}$
v	radial velocity
x	axial distance
y	radial distance from the boundary
y^+_{max}	$\frac{y\, u_\tau}{\upsilon} max$
α	$\int_0^y \frac{\rho u}{\rho_\infty u_\infty} \left(\frac{r}{R}\right) dy$
β	$\int_0^y \frac{\rho u^2}{\rho_\infty u_\infty^2} \left(\frac{r}{R}\right) dy$
υ	kinematic viscosity
ρ	density
θ	momentum thickness
δ^*	displacement thickness
δ	velocity boundary layer thickness, $\delta(.99)$
ζ	$\left[\frac{\rho_w v_w}{\rho_\infty v_\infty}\right] / \left[\frac{c_{f max}}{2}\right]$, injection rate parameter

$c_{fmax} = \dfrac{\tau_{max}}{\frac{1}{2}\rho_\infty u_\infty^2}$, dimensionless

y = vertical distance, inches

$R = \dfrac{u_\infty y}{12\,\upsilon_\infty}$, dimensionless; $\upsilon_\infty = 1.733 \times 10^{-4}$ $\dfrac{ft^2}{sec}$

Du/Dy = velocity slope, 1/sec

$\alpha(x, y) = \displaystyle\int_0^y \frac{\rho u}{\rho_\infty u_\infty} \left(\frac{r}{R}\right) dy$, inches

$\beta(x, y) = \displaystyle\int_0^y \frac{\rho u^2}{\rho_\infty u_\infty^2} \left(\frac{r}{R}\right) dy$, inches

y/δ , y/δ^*, dimensionless

$y^+ = \dfrac{yu\,\tau_{max}}{12\,\mu_\infty/\rho_\infty}$, where $\mu_\infty = 1.2413 \times 10^{-5}$ $\dfrac{lbm}{ft\text{-}sec}$, dimensionless

$u_\tau^* = u_\tau \Big/ \sqrt{\rho/\rho_\infty}$, (ft/sec)

$y^{+*} = \dfrac{yu\,\tau_{max}^*}{12\,\mu_\infty/\rho(y)}$, dimensionless

$u^+ = u/u_\tau$, dimensionless

$(1-u) = \dfrac{u_\infty\,(1-u/u_\infty)}{u_\tau}$, dimensionless

$$(1-u)^* = \frac{u_\infty (1-u/u_\infty)}{(u_\tau^*)_o} \text{ , dimensionless}$$

$$R^* = \frac{u_\infty y}{12\ \mu_\infty / \rho(y)} \text{ , dimensionless}$$

$$C_f/2 = \tau(y)\rho_\infty u_\infty^2 \text{ , dimensionless}$$

$$\epsilon = \frac{\tau}{du/dy} - \upsilon \text{ , eddy viscosity}$$

$$\epsilon_T = \frac{\tau}{d\bar{u}/dy} = (\mu + \epsilon_\mu), \frac{lbm}{ft/sec} \text{ , a total viscosity}$$

$$\epsilon_T/MU = \epsilon_T/\mu_\infty \text{ , dimensionless}$$

SUBSCRIPTS

w	wall value
∞	freestream value
max	maximum value

I. INTRODUCTION

In the recent years, there has been interest in providing means for thermally protecting a surface over which a hot fluid passes. Distributed injection of a secondary fluid into a boundary layer, a process usually referred to as a transpiration cooling, alters the temperature and velocity profiles of the boundary layer. The profile modifications result from changes in the surface boundary conditions. The velocity component normal to the surface does no longer have a zero value, and it can be controlled to produce varying effects by altering the injection rate of the secondary fluid. In order to fully understand a mass and heat transfer process in this situation, it is first necessary to understand the details of the fluid process.

Extensive studies of the laminar binary boundary layer have been made on both the fluid dynamic and heat transfer effects of transpiration cooling owing to the injection of either the mainstream gas or a foreign gas through a porous surface. However, transpiration cooling in a turbulent boundary layer has proved to be a far more formidable problem. The available, semi-empirical analyses remain largely unchecked due to lack of experimental data.

A research program was initiated at the Heat Transfer Laboratory of the University of Minnesota to obtain meaningful experimental data, references (1), (2).* In (1) air was used as an injected fluid, while in (2) helium was used as the secondary fluid.

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* Underlined numbers in parentheses refer to the listing in the References.

In both cases, the mainstream fluid was air. Due to an improved data reduction technique developed in (2), the present investigation is concerned with obtaining the most suitable parameter to correlate the data.

The test model was a porous, 2-inch diameter, circular cylinder aligned with its axis parallel to the flow direction. Measurements were made of the distribution in total pressure adjacent to the cylinder. Traverses were made at the four locations of 6, 10, 14 and 18 inches from the leading edge of the porous section at a nominal freestream velocity of 112 feet per second. The Reynolds number, based on freestream conditions, varied from 4×10^5 to 10.6×10^5. The three different injection ratios that were taken into account were $\rho_w v_w / \rho_\infty u_\infty = 0$, 0.00087 and 0.0021. Temperature and therefore density were assumed constant throughout the boundary layer because of low mainstream velocity and also due to the fact that the injected fluid was maintained at room temperature.

The present representation will mainly be concerned with the discussion of experimental techniques and both graphical and tabular presentations of results. Extensive data interpretation and analyses will be summarized in a forthcoming report.

More detailed description of works done in the field of transpiration cooling in turbulent boundary layer by the various investigators can be found in (2). Because the present report is a continuation of the studies made in (2), further discussion of it here is not felt necessary.

II. EXPERIMENTAL APPARATUS AND INSTRUMENTATION

Experimental Apparatus

The measurements were carried out in the low speed wind tunnel of the Heat Transfer Laboratory, Mechanical Engineering Department, University of Minnesota. The test section of the wind tunnel is 12 inches high, 24 inches wide and 30 inches long. The freestream velocity is nominally 120 feet per second. All measurements were made running closed circuit. The test section turbulence level was about 0.4%. Further details regarding tunnel construction and operating conditions may be found in (3).

The model which consisted of porous cylinder is shown in Fig. 1, and was made by the Aircraft Porous Media, Glen Cove, New York. It was formed by two woven wire screens with mesh counts 50 x 300 and 12 x 64 per square inch respectively. The coarser screen was sandwiched between the finer one in heated calenders. The final sheet was rolled and sintered to a thickness of 0.032 inch. When viewed through a steromicroscope, the surface

roughness produced by the sintered wires appears as triangles of approximately 0 005 inch to the side with a slightly smaller depth. The sintered sheet was finally rolled into a circular cylinder of 2.0 inch nominal diameter. The actual variation of the diameter is shown in Fig. 2a. Welding of the seam resulted in a solid strip along the cylinder approximately 1/8 inch wide. The porous section of the cylinder is 23.5 inch long fitted with an ogival nose piece and joined to an afterbody of same diameter. These three pieces were held tightly together by a center bolt. The permeability of the woven wire surface proved to be very non-uniform. Therefore, the inside of the porous shell was lined with approximately 30 layers of dense fiberglass filter paper to a nominal thickness of 0.35 inch (Fig. 1). This inner liner increases the pressure drop per unit flow rate of injected fluid and evens out any non-uniformities in the permeability, thus generating uniform injection rate. To check this, air was pumped through the model. A circular collector, with an internal diameter of 0.25 inch was firmly pressed against the outer surface of the model at random locations. A volumetric analysis of the results revealed that the flow rate was uniform over the entire model with exception of the welded seam to within ±4%. However, this figure is only qualitative since the permeability variation depends on the size of the sample used in the measurement.

At the downstream end of the model, a 0.5 inch, slightly flattened pipe enters and runs axially inside the model, ending near the end of the porous section of the cylinder (nose of the model). Several 1/8 inch holes were drilled into the walls of this pipe. The purpose of the pipe was to keep the flow uniform inside the model.

The afterbody of the model was firmly clamped to the wind tunnel floor. The sling was connected through adjustment screws bolted to vibration pads, which were anchored to the floor. With this installation, vibration of the model was reduced to a minimum. By visual observation through a cathetometer, it was found that the vibration, 10 inches downstream of the nose piece, was less than 0.001 inch in amplitude.

Total Pressure Probe and Traversing Mechanism

An impact pressure probe was used to determine the velocity distribution in the boundary layer. The probe senses the dynamic head in the boundary layer at the location of its tip. At the same longitudinal location, but in the freestream, a static-pressure probe is attached to the stem of the probe and measures the static pressure. The total pressure probe tip (see Fig. 3) was made from 0.035 inch O.D. stainless steel, hypodermic tubing, flattened to a 0.003 inch by 0.045 inch opening and honed smooth. The response time of the probe tip-manometer combination was less than 10 seconds.

The probe was attached to a sliding carriage centered over the test section of the wind tunnel. A micrometer head was mounted on these carriage tracks to provide longitudinal and vertical positioning of the probe for measurements along a vertical plane at the top of the test model in the region extending from the leading edge of the porous section to the trailing edge.

Manometer and Cathetometer

A 12-tube manometer bank equipped with a large reservoir sensed the pressure. The manometer fluid used was a red gage oil. The specific gravity (nominally 0.826) was measured with a pycnometer at several temperatures. An average straight line was drawn through the data points for calculation purposes. The meniscus of the manometer fluid was well defined when the tubes were illuminated from behind by a fluorescent light. Between the light and the manometer bank, a translucent paper was mounted to prevent the fluid from warming up due to the light and to provide a diffuse light source.

The relative position of the meniscus was measured with a Gaertner cathetometer capable of being read to ± 0.0001 inch.

Secondary Flow

The secondary flow was delivered at about 100 psig from the building air supply. The air line was connected to the experimental set-up through a pressure regulating valve which cut down

any pressure fluctuations by a factor of 1/10. The flow then passed through a volumetric gas meter and discharged into the inlet tube of the model. The injection flow rate was determined by measuring the time a known volume flow rate passed the flow meter. At the same time, the mean fluid pressure and temperature was measured at the inlet of the flow meter to provide data for the determination of the injected fluid density. The flow meter was made by the American Gas Company, Type 80B. A 0-60 psig Heise pressure gauge was used to measure the injected fluid pressure.

III. EXPERIMENTAL RUNS AND EVALUATION

Model Alignment

An alignment probe was used for checking rotational symmetry of the flow around the model. When mounted on the model, the tip of the pitot tube was at a fixed distance of about 0.050-inch from the cylinder's surface. This constant height probe was kept at a fixed axial distance and rotated around the cylinder. The boundary layer trip wire was not attached to the model because the laminar boundary layer is more sensitive to misalignments than is the turbulent boundary layer.

The constant height probe was then used to obtain information regarding the symmetry of the flow in the boundary layer. At each of the axial locations x = 2, 6.5, 11, 17 inches,

readings of the probe (Δp) were recorded at regular angular intervals of 45^{o} around the model circumference. The dynamic head $(\Delta p)_{\infty} = (u/u_{\infty})^2$ was computed at 8 points around the cylinder circumference, at each of the axial locations mentioned above.

The model orientation was then adjusted so as to minimize the pressure peaks and valleys. The results of the adjustment are shown on Fig. 4. The model is not quite straight (Fig. 2) and due to geometrical assymmetries the final non-uniformities seemed to be reasonable.

After the model had been aligned parallel to the flow direction, the experimental data were taken. Twelve velocity profiles were measured altogether. At a given injection rate, the profiles were measured at four longitudinal locations four inches apart. The first location was six inches downstream of the start of the porous test section. When setting the probe to its initial position at the beginning of each velocity profile, the probe was first advanced until its tip was in good contact with the wall. Then, while moving upward from the wall, electrical contact was monitored by means of an ohm meter. This procedure was employed in order to eliminate any backlash in the micrometer head screw advance. The barometric pressure was measured before and after each run of four profiles (fixed injection rate). All the profiles were taken over a period of fourteen hours.

Governing Equations

The equations of continuity and momentum in cylindrical coordinates become, when all second order terms have been neglected,

$$\frac{1}{r}\frac{\partial}{\partial r}(\rho v r) + \frac{\partial}{\partial x}(\rho u) = 0 , \qquad (1)$$

$$\rho u \frac{\partial u}{\partial x} + \rho v \frac{\partial u}{\partial r} = - \frac{\partial p}{\partial x} + \frac{\partial \tau}{\partial r} + \tau/r \qquad (2)$$

By integrating these two equations and substituting v from the continuity equation in to the momentum equation, there is obtained, after some manipulations, considering that $\frac{\partial p}{\partial x} = 0$

$$\frac{\tau}{\rho_\infty u_\infty^2}\left(\frac{r}{R}\right) = \frac{\tau_w}{\rho_\infty u_\infty^2} + \left[\frac{\rho_w v_w}{\rho_\infty u_\infty}\right]\left[\frac{u}{u_\infty}\right]$$

$$+ \frac{d}{dx}\left[\int_0^y \frac{\rho u^2}{\rho_\infty u_\infty^2}\left(\frac{r}{R}\right) dy\right] - \frac{u}{u_\infty}\frac{d}{dx}\left[\int_0^y \frac{\rho u}{\rho_\infty u_\infty}\left(\frac{r}{R}\right) dy\right] \qquad (3)$$

In this equation, subscripts ∞ and w are, respectively, the free-stream conditions and the conditions at the wall; R is the radius of the cylinder and r is the radial distance, $R + y$. τ_w can be found by integrating this equation out to the freestream and applying the freestream condition that $\tau_\infty = 0$ (or $\frac{du}{dy} = 0$).

This gives

$$c_{f_w}/2 = \tau_w/\rho_\infty u_\infty^2 = \frac{d\theta}{dx} - \frac{\rho_w v_w}{\rho_\infty u_\infty} \qquad (4)$$

where $\theta = \int_0^\infty \frac{\rho u}{\rho_\infty u_\infty} \left(1 - \frac{u}{u_\infty}\right)\left(\frac{r}{R}\right) dy \qquad (5)$

is the momentum thickness.

The dimensionless universal turbulent velocity u^+ and distance y^+ are given by

$$u^+ = u/(\tau_w/\rho_\infty)^{1/2}; \quad y^+ = y(\tau_w/\rho_\infty)^{1/2}/\upsilon_\infty : \qquad (6)$$

$$u^+_{max} = u/(\tau_{max}/\rho_\infty)^{1/2}; \quad y^+_{max} = y(\tau_{max}/\rho_\infty)^{1/2}/\upsilon_\infty \qquad (7)$$

With

$$\alpha(x, y) = \int_0^y \frac{\rho u}{\rho_\infty u_\infty}\left(\frac{r}{R}\right) dy; \qquad (8)$$

$$\beta(x, y) = \int_0^y \frac{\rho u^2}{\rho_\infty u_\infty^2}\left(\frac{r}{R}\right) dy \qquad (9)$$

Equation (3) becomes

$$(c_f/2)\left(\frac{r}{R}\right) = c_{f_w}/2 + \frac{\rho_w u_w}{\rho_\infty u_\infty}\left(\frac{u}{u_\infty}\right) + \frac{d\beta}{dx} - \frac{u}{u_\infty}\frac{d\alpha}{dx} \qquad (10)$$

Data Reduction

The reduction of the experimental measurements and evaluation of the results were carried out on Control Data 1604 digital computer at the Numerical Analysis Center, University of Minnesota.

Each set of data (one velocity profile) was fed successively and all results stored until all four profiles for that given injection had been calculated. The velocity was calculated from the following equation:

$$u = 18.287 \sqrt{\frac{\Delta h \times S.G}{\rho}} \quad \text{ft/sec} \qquad (11)$$

where

Δh = measured deflection in manometer in inches of manometer fluid

S.G = specific gravity of the manometer fluid = $0.850 - 0.0004\ T^{\circ}F$.

The density was calculated using the perfect gas law equation. The temperature was assumed uniform across the boundary layer and was measured in the freestream with mercury thermometer.

Certain properties of the boundary layer can be deducted from the velocity profiles

$\delta(.99)$ = the velocity boundary layer thickness where $u/u_{\infty} = 0.99$

δ^* = the displacement thickness

$$= \int_0^{\infty} \left[1 - \frac{u}{u_\infty}\right] \frac{r}{R} \, dy \; ; \qquad (12)$$

θ = the momentum thickness

$$= \int_0^{\infty} \frac{u}{u_\infty} \left(1 - \frac{u}{u_\infty}\right) \frac{r}{R} \, dy \qquad (13)$$

The boundary layer thickness was determined by fitting a least squares, second-degree polynomial through four velocity ratio points with two points on each side of the value .99 and then evaluating y at this value of u/u_∞.

The displacement and momentum thickness integrals were evaluated numerically by fitting a second-degree polynomial through five adjacent values of the integrand and then integrating over an interval between two points in the middle of the range. This was done successively for each y-location and the integral accumulated. For the first two intervals adjacent to the wall, the three lowest values were used in addition to the fact that the integrands are zero at y = 0 and the second-degree polynomial was integrated up to the second measured point.

The wall shear stress can be calculated from the following equation:

$$c_{f_w}/2 = \frac{d\theta}{dx} - \frac{\rho_w v_w}{\rho_\infty u_\infty} \qquad (14)$$

The friction factor can be determined by differentiating the momentum thickness with respect to x, once the momentum thickness has been determined.

In the experimental set-up, the trip wire was located 1.5 inches ahead of the origin of the porous section of the cylinder. In order to determine the virtual origin, x_o, of the boundary layer, a "French Curve" was used to extrapolate boundary layer, displacement, and momentum thickness to zero, and the value $x_o = 1.6$ inches was found. A least squares, straight line was made of the momentum thickness θ versus $(x + x_o)$ on a log-log scale. The distance x is measured from the origin of the porous section. When this least squares fit was differentiated with respect to x and applied to Eq. 14, the wall shear stress can be found. By using this value of the wall shear stress, u+ and y+ could be determined from Eq. (6).

The values for $\alpha(y)$ and $\beta(y)$ were calculated using procedures similar to that of calculating the momentum thickness, except these values were stored for each value of y. For the various axial locations, the measured quantities were not obtained at the same radial locations. In order to be able to differentiate the quantities α and β at constant y, a polynomial interpolation scheme was necessary such that these quantities could be obtained at any y location.

The central difference technique was used in order to obtain the shear stress distribution at stations x = 10 inches and x = 14 inches. First the values of α and β at the stations on each side of the middle station were interpolated at the same y values as the middle station. Then least squares curves of the form $\alpha = A_1(x + x_o)^{B_1}$ and $\beta = A_2(x + x_o)^{B_2}$ were fit through three points at a given y location. By differentiating these curves and applying the result at the middle station, the local friction factor could be obtained from Eq. (10).

The shear stress at any point in a turbulent flow can be related to the velocity gradient by means of a diffusivity for momentum transport, or eddy viscosity, ϵ, defined by the equation

$$\tau = \rho(\upsilon + \epsilon)\frac{du}{dy} \qquad (15)$$

The distribution of eddy viscosity was found by fitting a least squares, second-degree polynomial through five points of the velocity, then differentiating, and applying the result at the mid-point.

Hinze (4) obtained the following correlation for the eddy viscosity in a circular tube and boundary layer with no injection which was independent of Reynolds number:

$$\frac{\epsilon}{u_\tau \delta} = f(y/\delta) \qquad (16)$$

where u_τ is the shear stress velocity based on the wall shear stress. In the case of injection, the maximum value of the shear stress occurs in the flow due to the fact that the injection reduces the wall shear stress value as can be seen from Eq. 14. Thus, in a small region adjacent to the wall, the shear stress is reduced due to this fact. It is therefore reasonable to use the maximum value of the shear stress velocity rather than a wall value when correlating the eddy viscosity in flow with injection through the boundary wall. Similar reasoning applies to the shear stress value which is used in the law of the wall variables $u^+ = \frac{u}{u_\tau}$ and $y^+ = \frac{y\, u_\tau}{\upsilon}$ and in the defect law variable $(u_{max}-u)/u_\tau$. These variables are therefore calculated also using the maximum shear stress value $u_{\tau\ max}$.

V. PRESENTATION OF RESULTS

The normalized velocity profiles are represented in Figs. 5, 6 and 7 as a function of normalized distance $y/\delta(.99)$. On each figure (for a given injection rate), the profiles are plotted for the four axial stations 6', 10", 14" and 18" downstream of the origin of the porous section. On Fig. 7 a comparison with Tewfik (1) is made for same injection rate.

A cross plot of the velocity profiles are represented in Fig. 8, with parametric values of injection rate. Here the lines represent the average line through the points shown on Figs. 5, 6 and 7.

The velocity defection from freestream value is represented in Figs. 9, 10 and 11 as a function of log (y/δ). It can be seen from these figures that more than 90 per cent of the boundary layer has a similarity as the flow passes down the model. Only in a small region adjacent to the wall is there an actual variation in velocity occurring as a function of axial distance. Fig. 12 shows the same velocity representation but now at a given axial position and for parametric value of injection rate. It is observed from this figure that the velocity defects more from the freestream with increasing injection and this is especially true in the middle of the boundary layer.

The boundary layer thickness is represented in Fig. 13 as a function of the axial distance for the various injection rates. Inspection of the figure reveals that the boundary layer thickness increases as the injection rate increases. This increase is as much as 30 per cent at highest injection rate.

Comparison is made with previous work done for air injection (2) and in addition with Tewfik's data (5). The agreement is satisfactory. The displacement thickness and momentum thickness are shown in Figs. 14 and 15. They show similar trends as the boundary layer thickness. The dashed lines on the figures are the faired curves through the calculated points for no injection. It can be seen by inspection of the figures that when extrapolated down to zero, the origin of the boundary layer is found to be 1.6 inch

upstream of the origin of the porous section, and 0.1 inch upstream of the trip wire.

The wall friction coefficient is represented in Fig. 16 versus Reynolds number based on the distance from the virtual origin of the boundary layer and for parametric values of the injection rate. The unshaded points represent results obtained by differentiating the momentum thickness and substituting into Eq. (14) while the shaded points represent results obtained from Eq. (10) when evaluated in the freestream. Inspection of the figure reveals that the wall friction coefficient reduces with injection rate and in addition the effect of Reynolds number becomes more pronounced as the injection rate is increased.

The friction coefficient distribution is represented in Figs. 17 and 18 as a function of y/δ for station x = 10 inch and 14 inch respectively. On each figure the distribution is represented for the various injection rates. It can be seen from the figures that the maximum friction factor does not occur at the wall when secondary flow is present. In addition, the magnitude of the maximum value does not change much. Furthermore, the figures reveal that the maximum friction factor moves away from the wall as the injection rate is increased.

Representation of the "law of the wall" variables based on the maximum shear stress velocity is represented in Fig. 19

for the various injection rates and stations x = 10 inch and 14 inch. The correlation is quite good, especially when taking cognizance of the fact that in some of the instances the ratio of maximum shear stress to wall shear stress is of the order of four. Comparison is made on the figure with Von Karman and Deissler universal velocity distributions with better agreement to Deissler's profile.

The defect-law variables are shown in Figs. 20 and 21 based on maximum shear stress velocity. A comparison is made with a velocity distribution suggested by Hinze (4) for a boundary layer flow. The experimental points all fall slightly higher than the curve.

Representation of normalized eddy viscosity distribution in the boundary layer is shown on Figs. 22 and 23 for station x = 10 inches and 14 inches respectively. The eddy viscosity which has the dimension of velocity times distance is normalized by the maximum shear stress velocity and the thickness of the boundary layer. Inspection of the figures reveals that by using the maximum shear stress velocity, the correlation for the various injection rates is far more difficult to achieve than if the wall shear stress value were used. It is also of interest to note the good agreement with boundary layer flow without injection obtained by Hinze (4) using Klebanoff's data. It is worth mentioning that if the wall shear stress velocity had been used instead of maximum shear stress velocity,

the scatter in the points would have been of the order of 100 per cent.

Fig. 24 represents the ratio of the wall shear stress to that for no injection (or the corresponding friction coefficient ratio) as a function of normalized injection rate F. The figure reveals that for an injection rate of only 2/10 of a per cent of the freestream flow rate the wall shear stress has been reduced by a factor of 3 (approximately). Comparison is made with available experimental data.

The shaded points, which are data obtained for helium injection (2), and the data obtained by Smith (6) for injection through a flat plate show favorable agreement with the pres nt investigation. However, the data of Tewfik (5) show much less reduction in the wall shear stress value but are in good agreement to data by Olson and Eckert (7) for uniform air injection into circular pipe flow.

In order to correlate these data, the reduction of the wall shear stress value is represented in Fig. 25 as a function of the injection rate parameter, ζ . This parameter occurs naturally in turbulent analysis, and is two times the normalized injection rate divided by maximum friction coefficient. This brings the various experiments closer together. The data by Olson and Eckert (7) could not be compared with the rest of the data due to the fact that the friction factor in a tube is defined in a different way from the friction factor for boundary layer flow.

The fractional difference between the maximum and wall values of the shear stress is shown in Fig. 26 as a function of injection rate parameter. Here again the data from the present investigation and those for helium injection fall higher than the rest of the presented data. However, there seems to be a Reynolds number dependence for both the present data and for data of Smith (6). In order to eliminate the Reynolds number dependence, the same representation is presented in Fig. 27 versus the injection rate parameter, ζ , which is the normalized injection rate divided by the maximum friction coefficient. This seems to bring all the data points closer together. However, the data by Olson and Eckert (7) cannot be compared with the other results due to the fact that the friction factor in a tube is defined differently from the boundary layer friction factor. These results show once again that the maximum value of the friction factor seems to be a better correlation factor than the wall friction factor.

The location of maximum shear stress is represented in Fig. 28 as a function of blowing rate parameter , ζ. Once again, a comparison is made with data available in the literature. It can be seen when compared with boundary layer flow with helium injection (2) that the agreement is favorable.

REFERENCES

1. O.E. Tewfik, E.R.G. Eckert, and L.S. Juriwicz, "Measurements of Heat Transfer from a Circular Cylinder to an Axial Stream with Air Injection into a Turbulent Boundary Layer," Heat Transfer Laboratory Report HTL-TR No. 38, 1961.

2. C.J. Scott, E.R.G. Eckert, V.K. Jonsson and J.W. Yang, "Measurements of Velocity and Concentration Profiles for Helium Injection into a Turbulent Boundary Layer Flowing over an Axial Circular Cylinder," Heat Transfer Laboratory Report HTL-TR, No. 55, 1964.

3. R. Eichorn, "Reduction of Turbulence in a Low-Speed Wind Tunnel," M.S. Thesis, University of Minnesota, 1955.

4. Y.O. Hinze, "Turbulence," McGraw-Hill Book Co., New York, 1959.

5. O.E. Tewfik, "Some Characteristics of the Turbulent Boundary Layer with Air Injection," AIAA Journal, Vol. 1, 1963, p. 1306.

6. K. A. Smith, "The Transpired Turbulent Boundary Layer," Ph.D. Thesis, Massachusetts Institute of Technology, Cambridge, Mass., 1962.

7. R.M. Olson and E.R.G. Eckert, "Experimental Studies of Turbulent Flow in a Porous Circular Tube with Uniform Injection Through the Tube Wall," ASME Paper No. 65-APM-29, 1965.

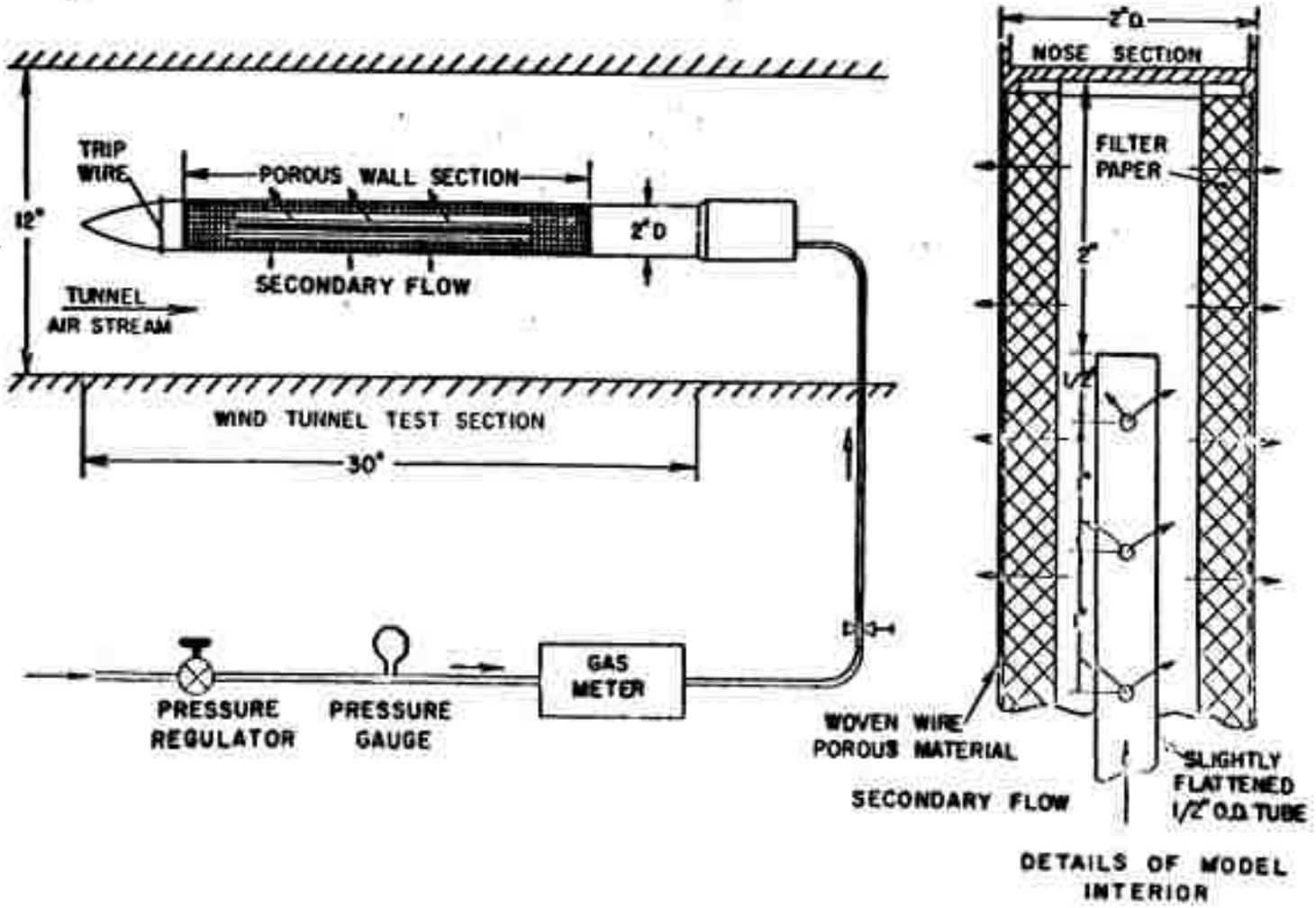

FIG. 1. SCHEMATIC OF APPARATUS

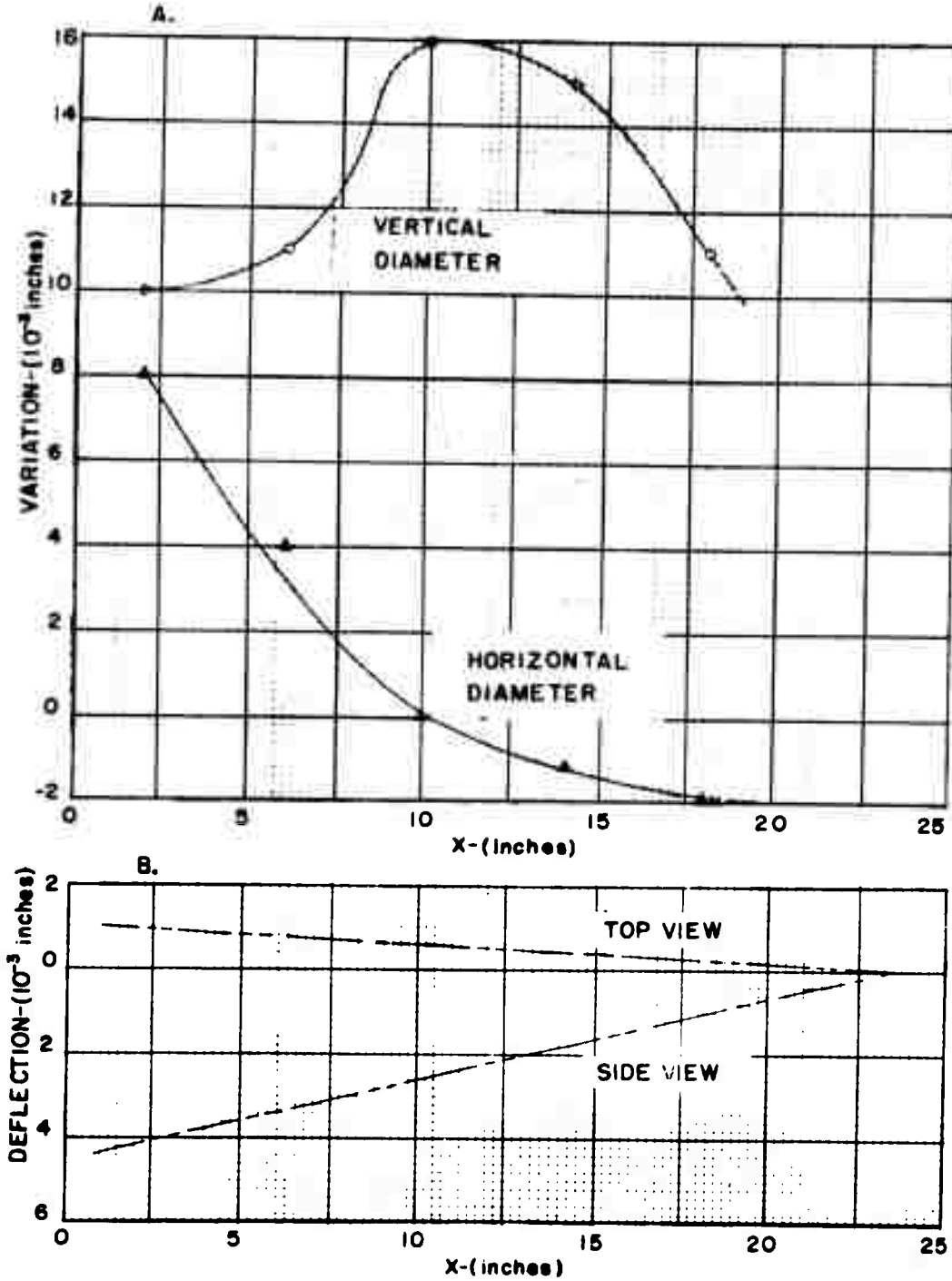

FIG. 2 - A VARIATION OF THE DIAMETER OF THE POROUS CYLINDER

FIG. 2 - B DEFLECTION OF THE CYLINDER'S AXIS

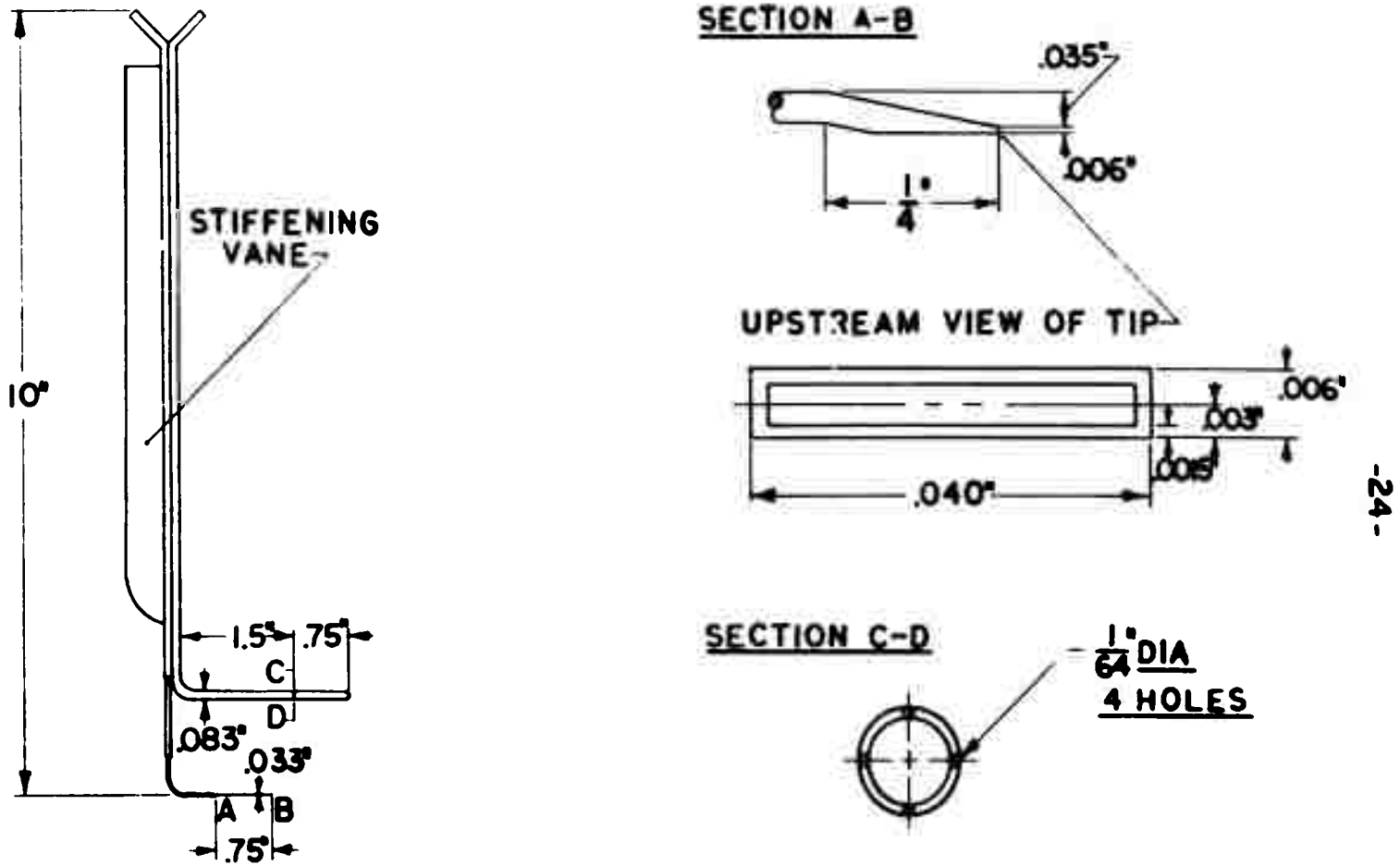

FIG. 3 PRESSURE PROBE

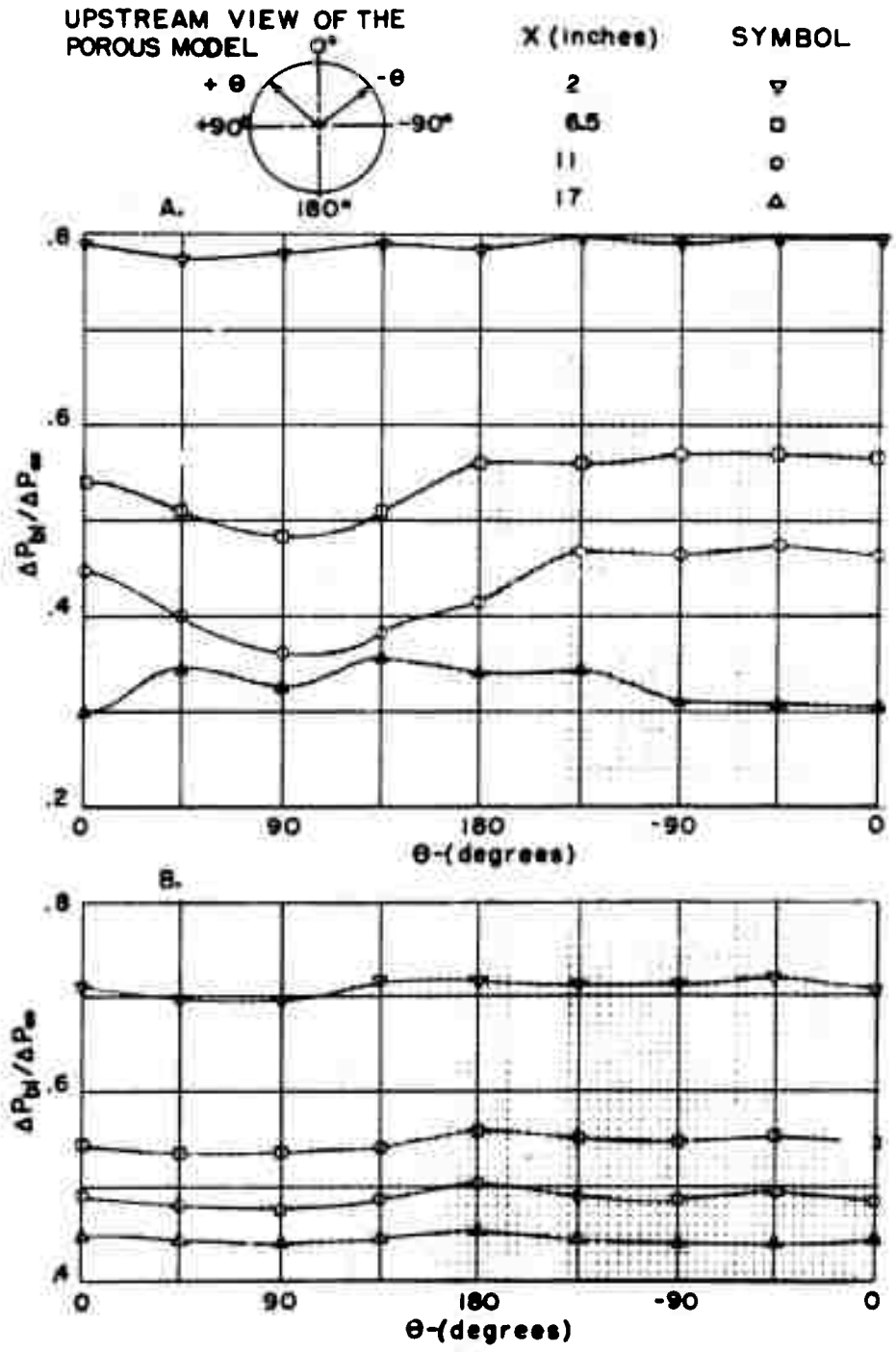

FIG. 4 FLOW SYMMETRY AROUND THE MODEL
A. BEFORE, B. AFTER ALIGNMENT

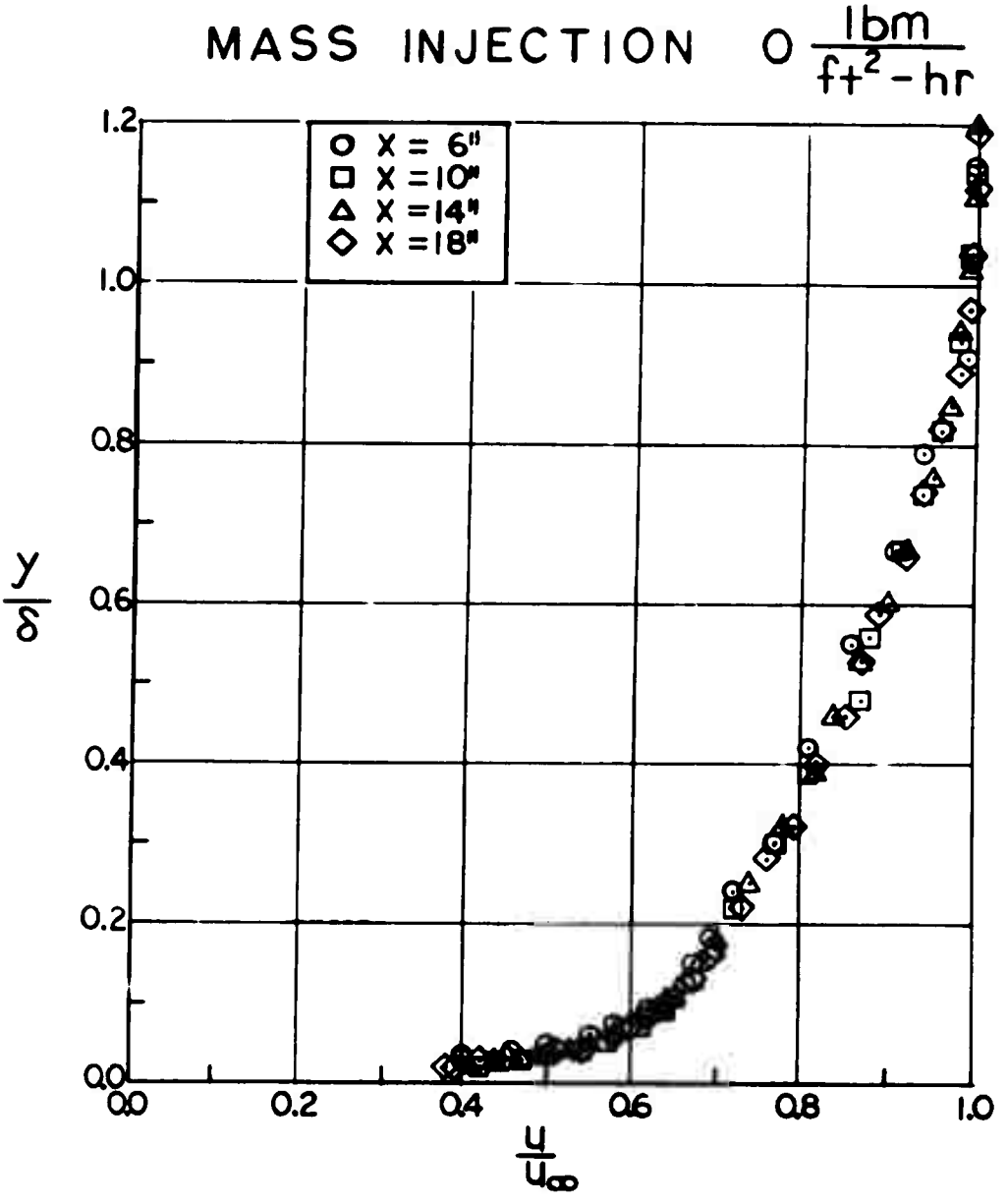

FIG. 5 VELOCITY DISTRIBUTION AT VARIOUS STATIONS WITH NO INJECTION

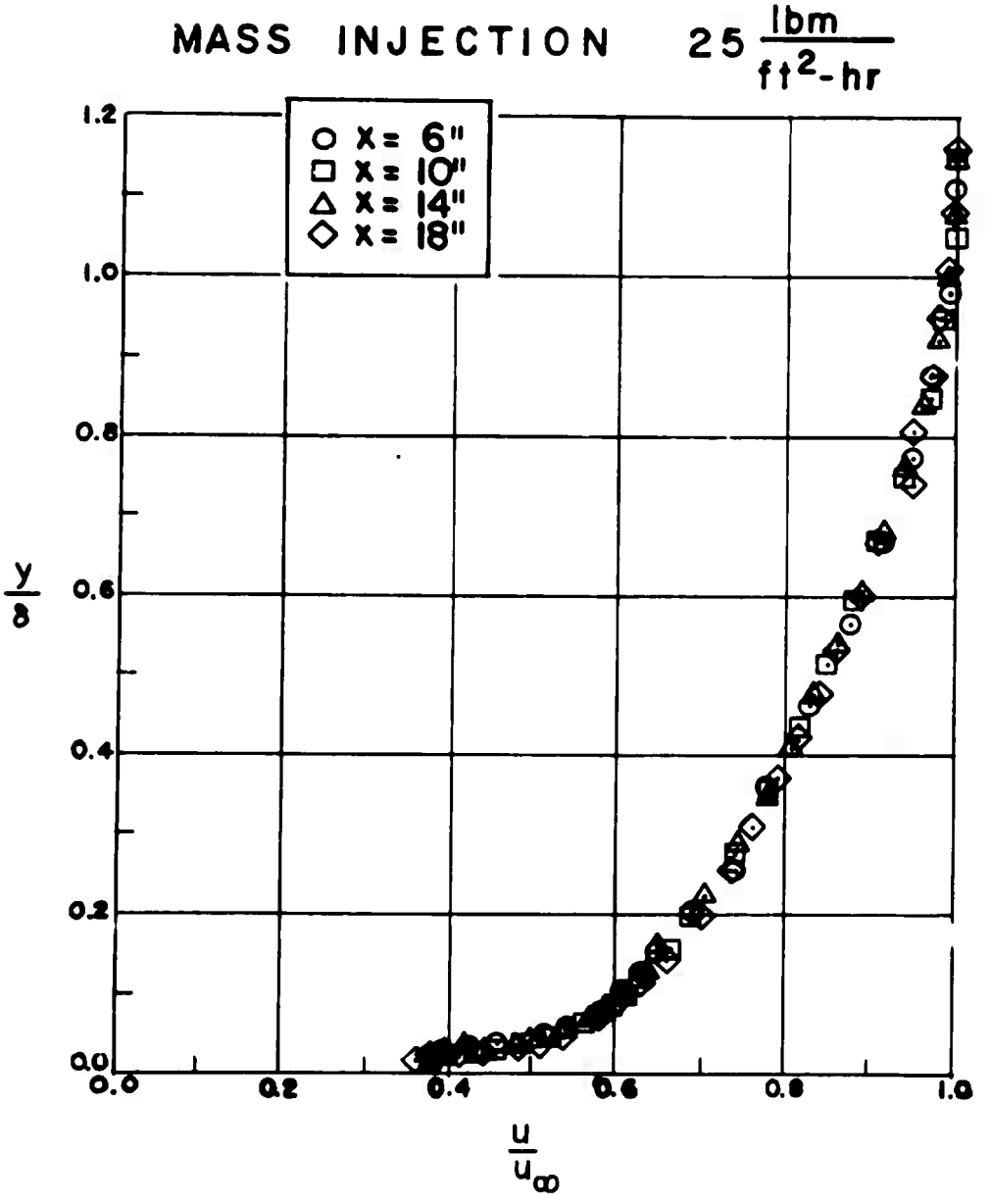

FIG. 6 VELOCITY DISTRIBUTION AT VARIOUS STATIONS WITH MEDIUM INJECTION

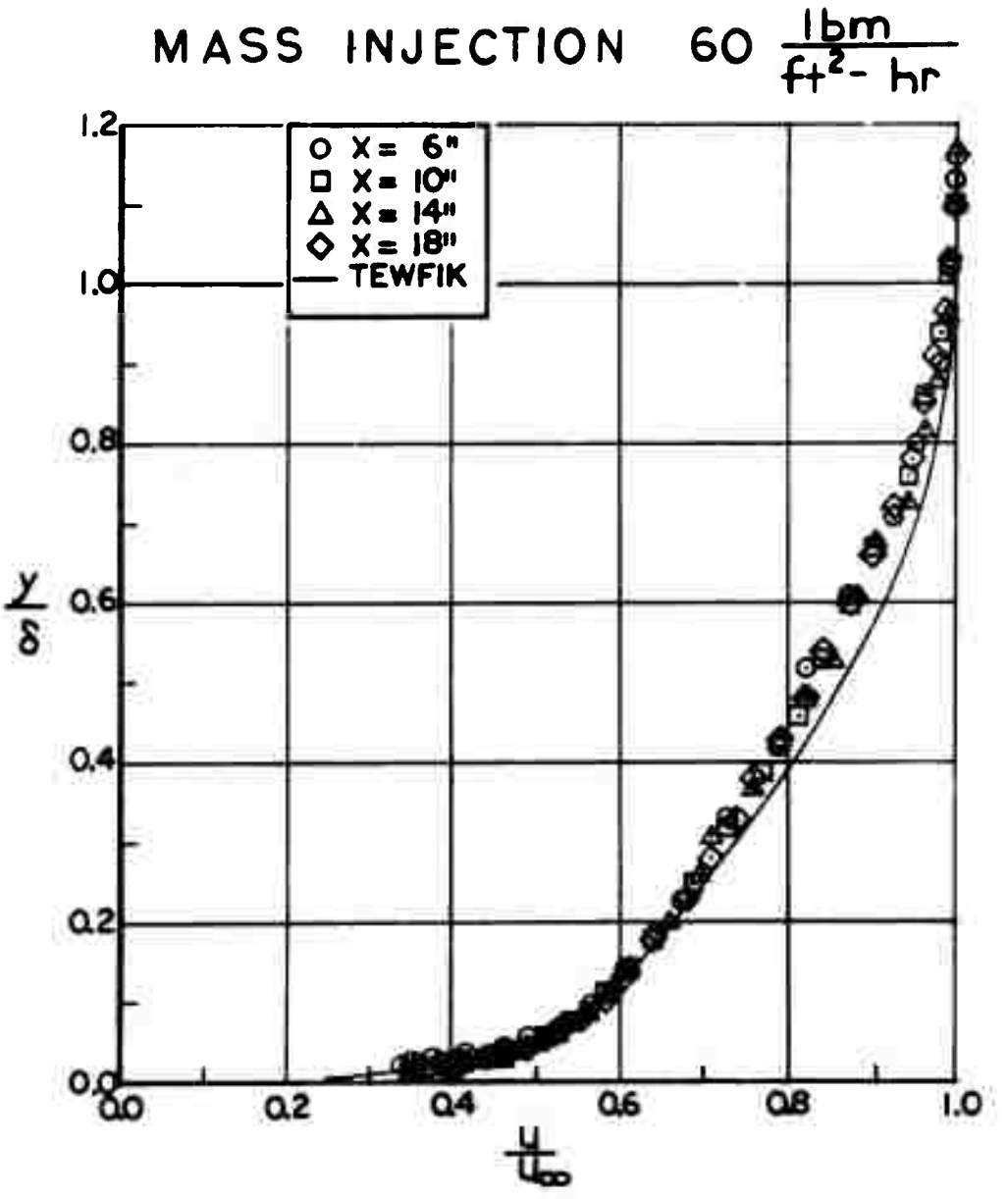

FIG. 7 VELOCITY DISTRIBUTION AT VARIOUS STATIONS WITH HIGHEST INJECTION

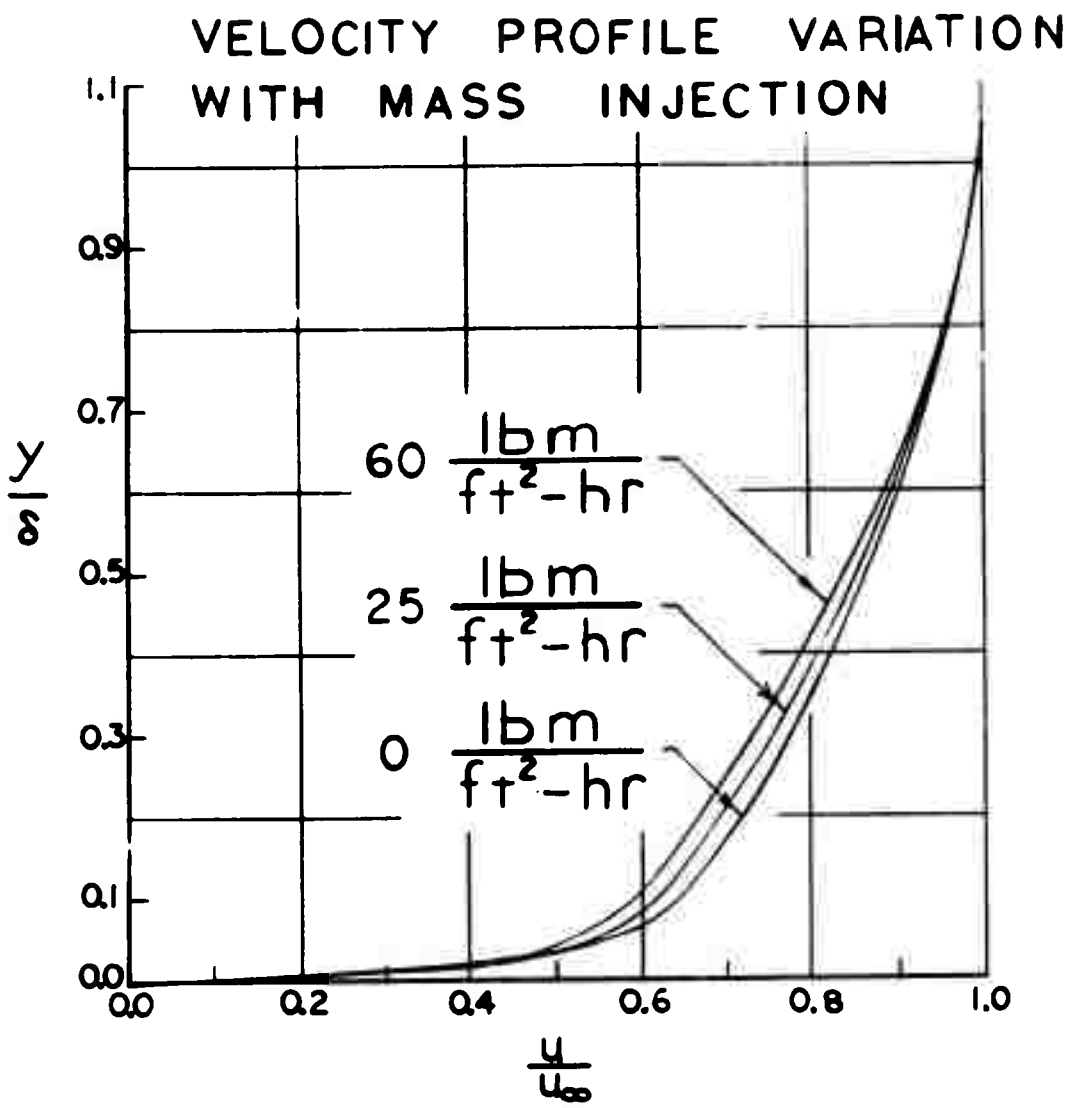

FIG. 8 VELOCITY PROFILE VARIATION WITH MASS INJECTION

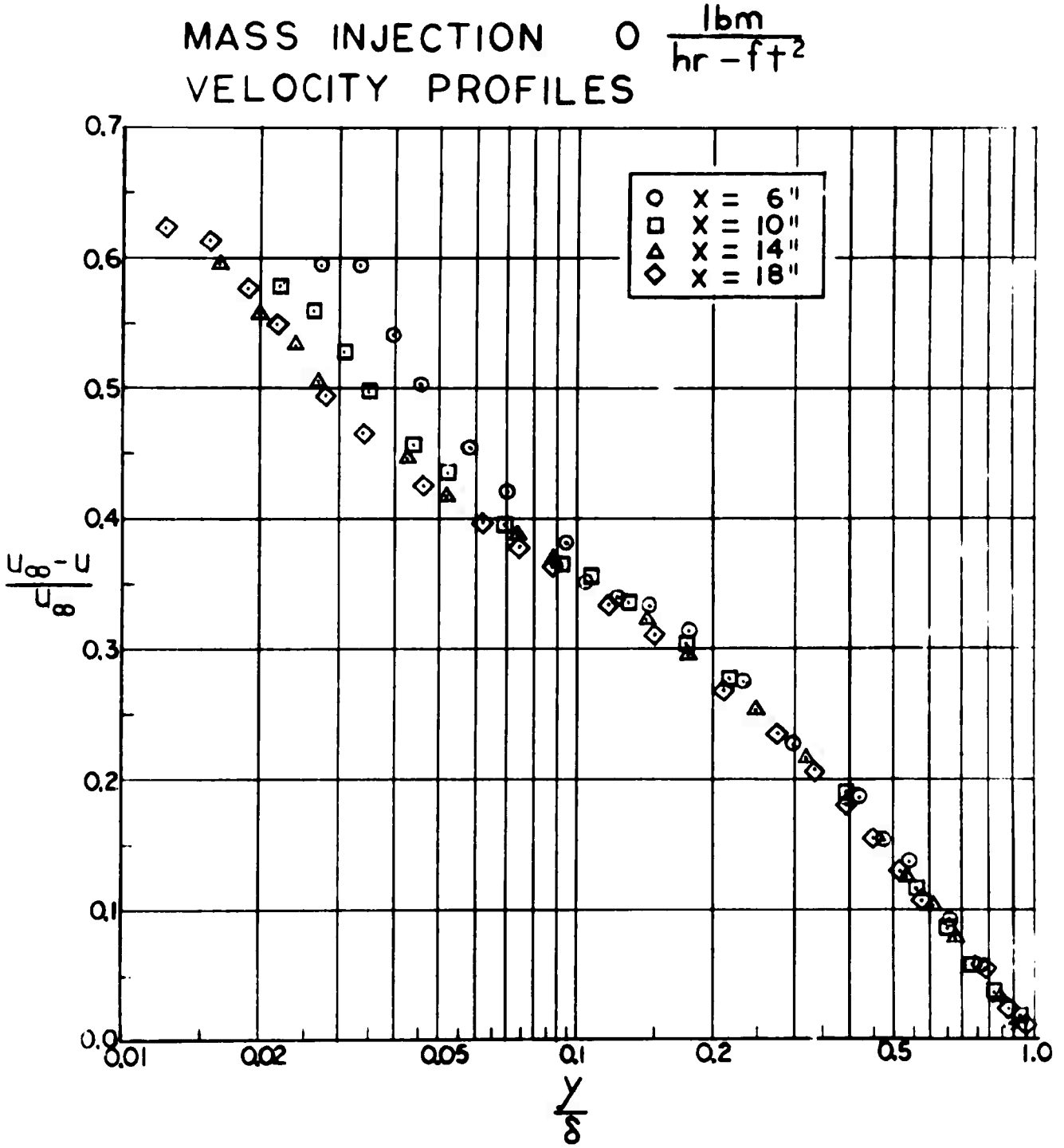

FIG. 9 DEFECTION OF VELOCITY FROM FREE STREAM VALUE FOR NO INJECTION

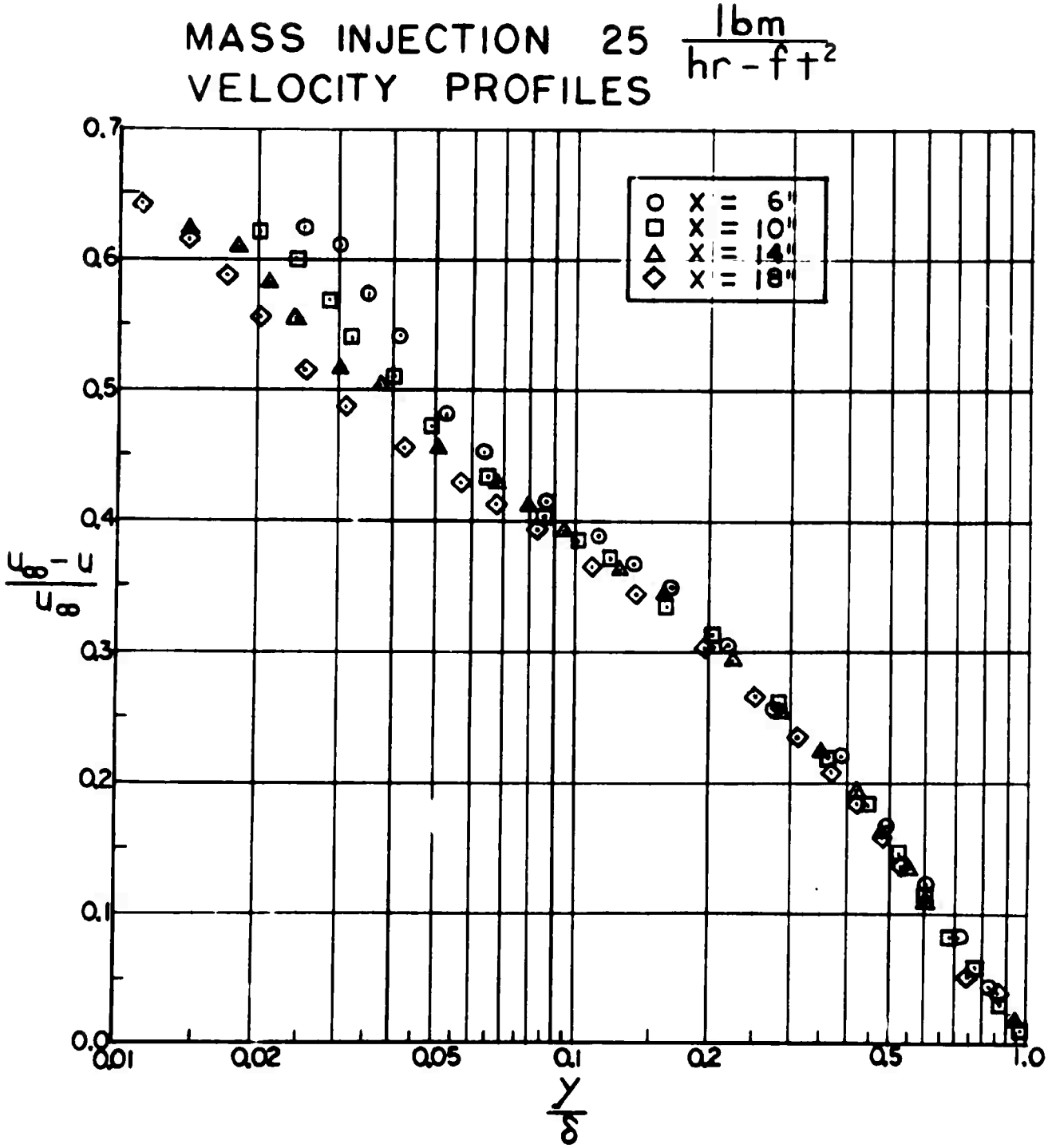

FIG. 10 DEFECTION OF VELOCITY FROM FREE STREAM VALUE FOR MEDIUM INJECTION

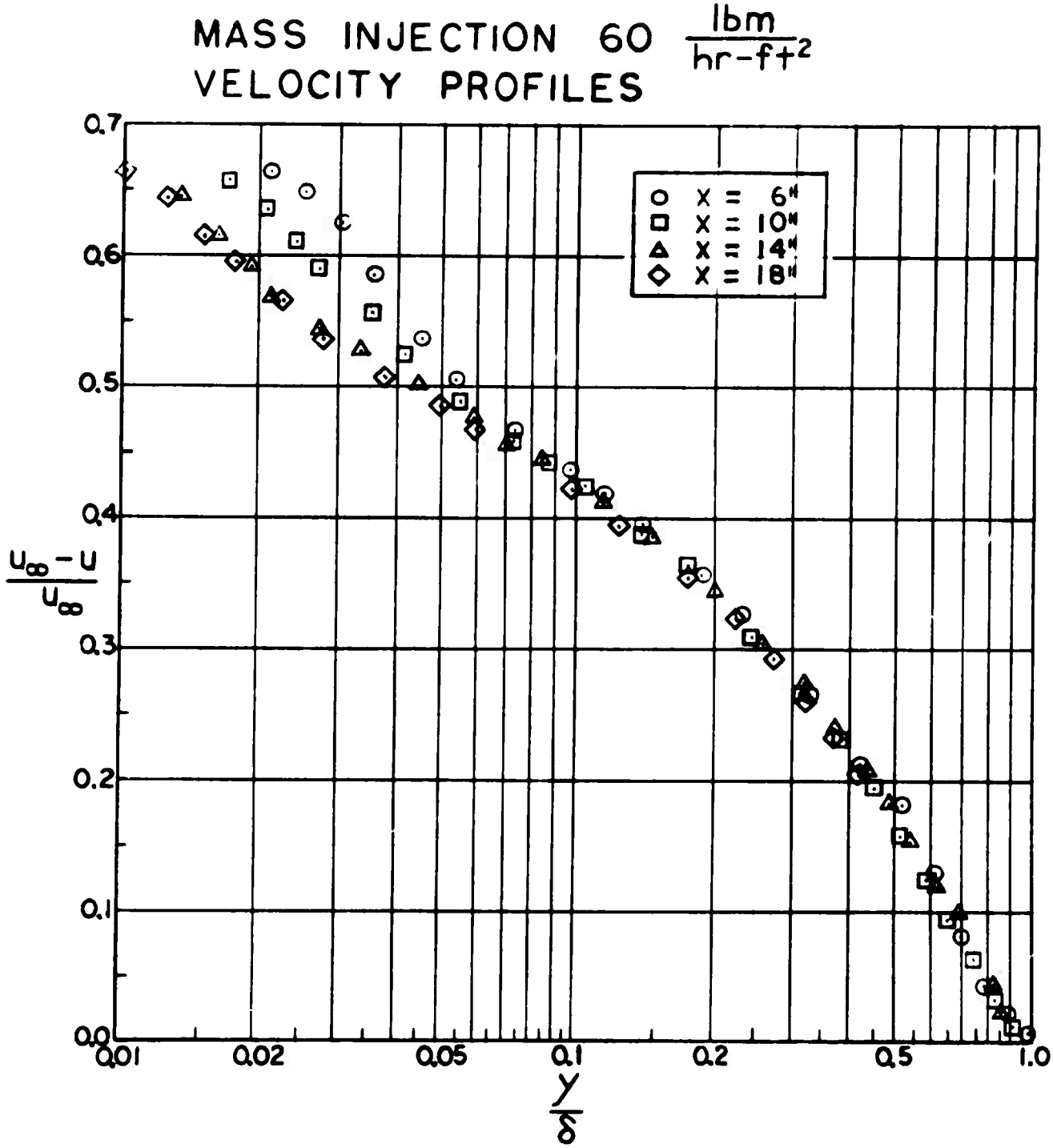

FIG. 11 DEFECTION OF VELOCITY FROM FREE STREAM VALUE FOR HIGHEST INJECTION

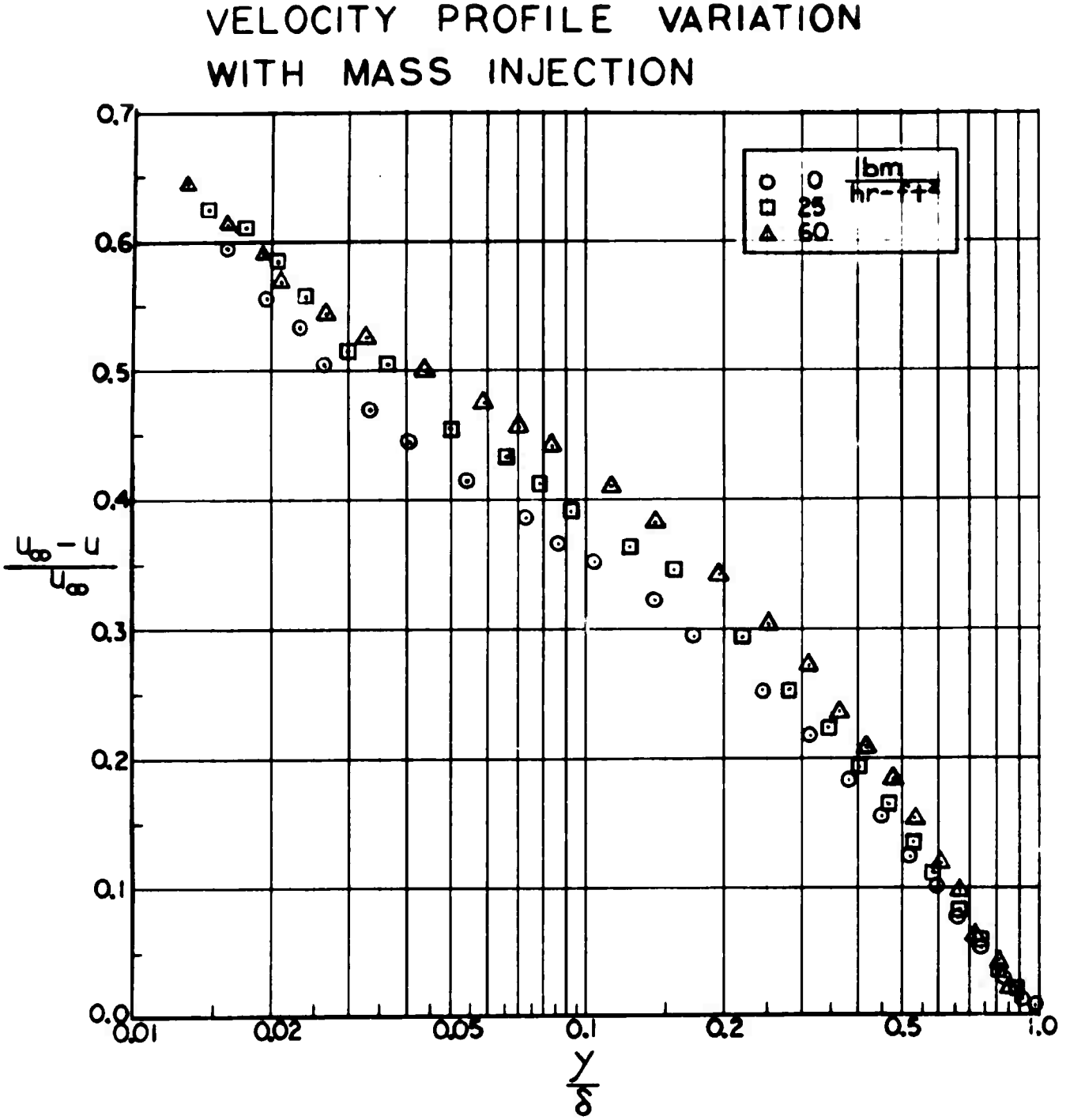

FIG. 12 DEFECTION OF VELOCITY FROM FREE STREAM VALUE FOR VARIOUS INJECTION RATES AT x = 14 INCHES

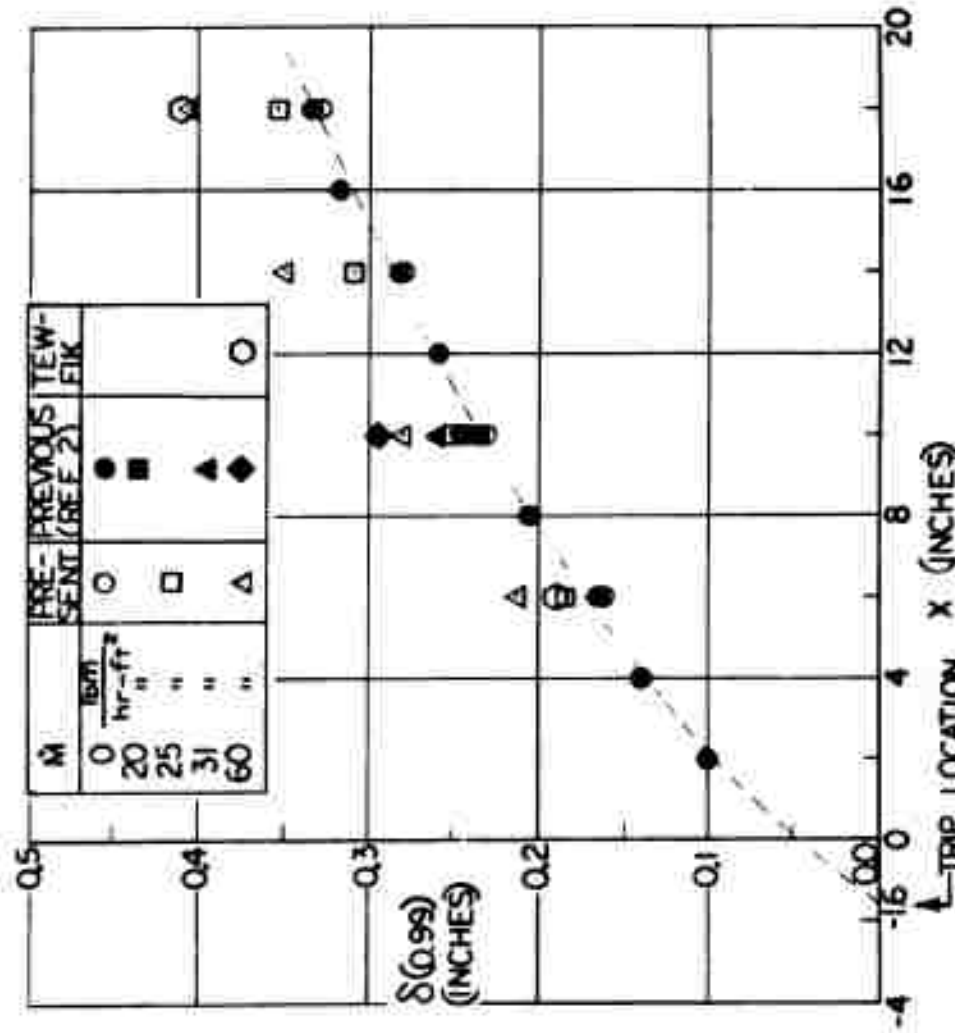

FIG. 13 VELOCITY BOUNDARY LAYER THICKNESS FOR VARIOUS INJECTION RATES

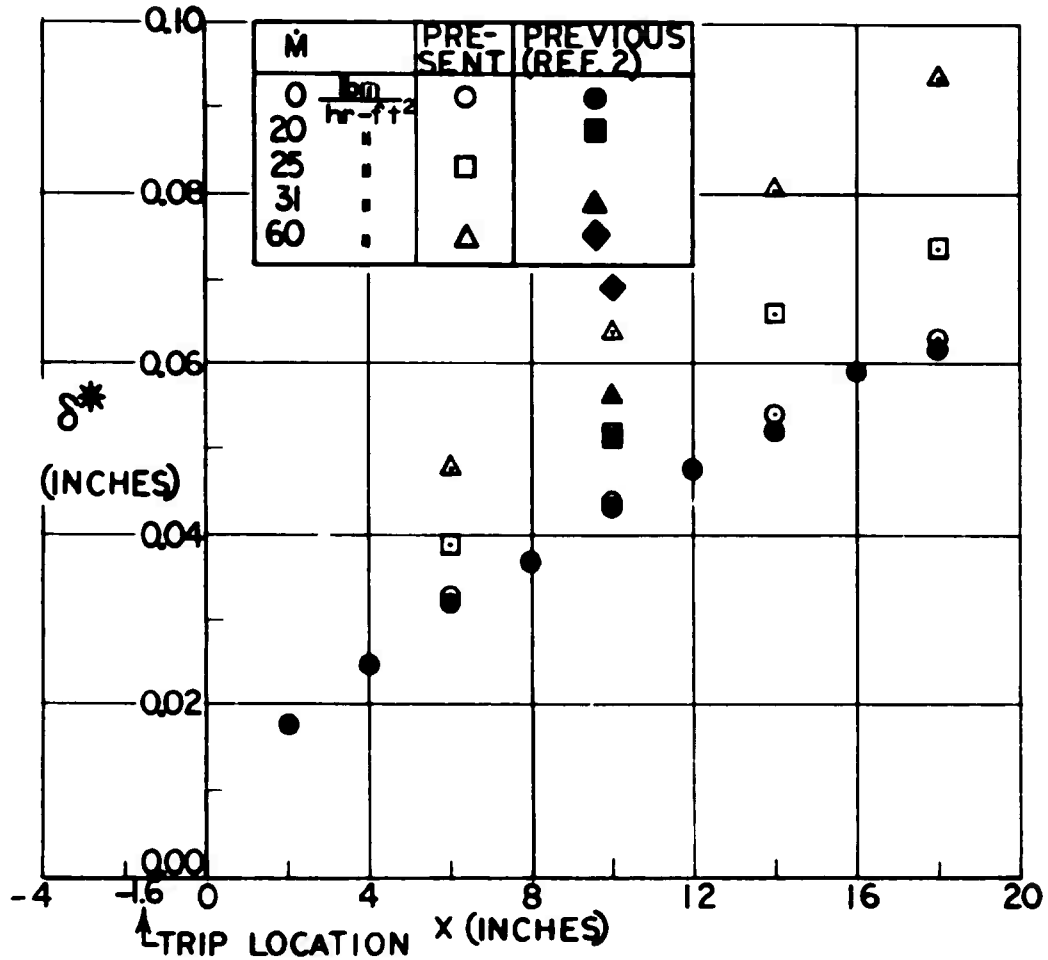

FIG. 14 DISPLACEMENT THICKNESS FOR VARIOUS INJECTION RATES

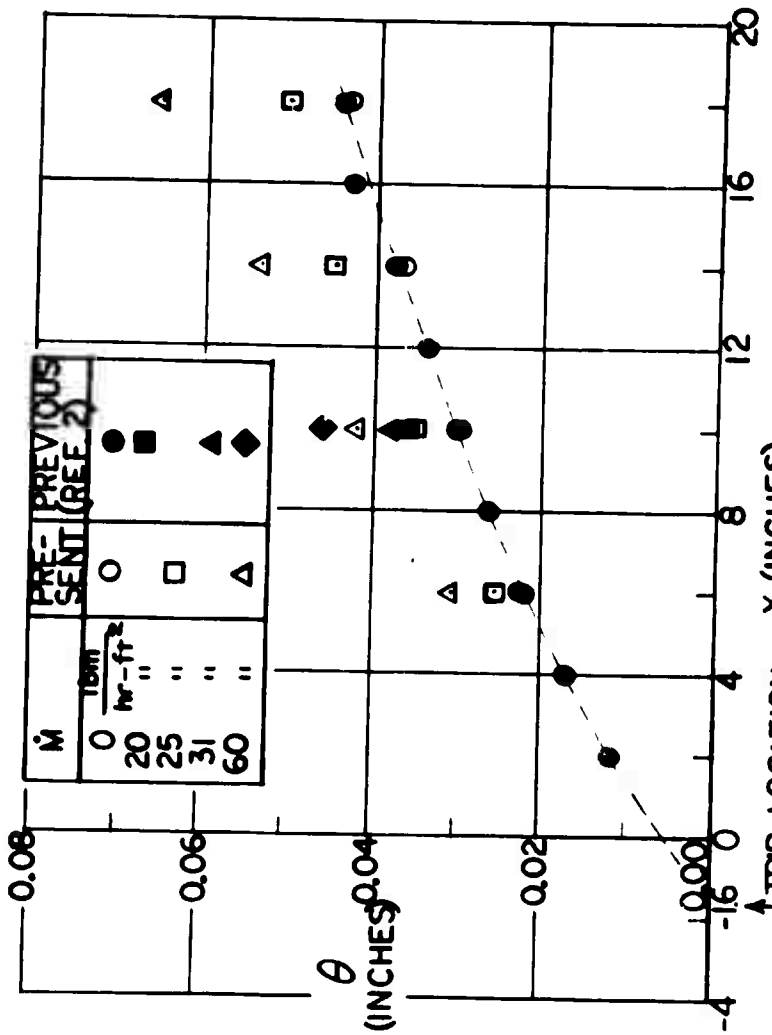

FIG. 15 MOMENTUM THICKNESS FOR VARIOUS INJECTION RATES

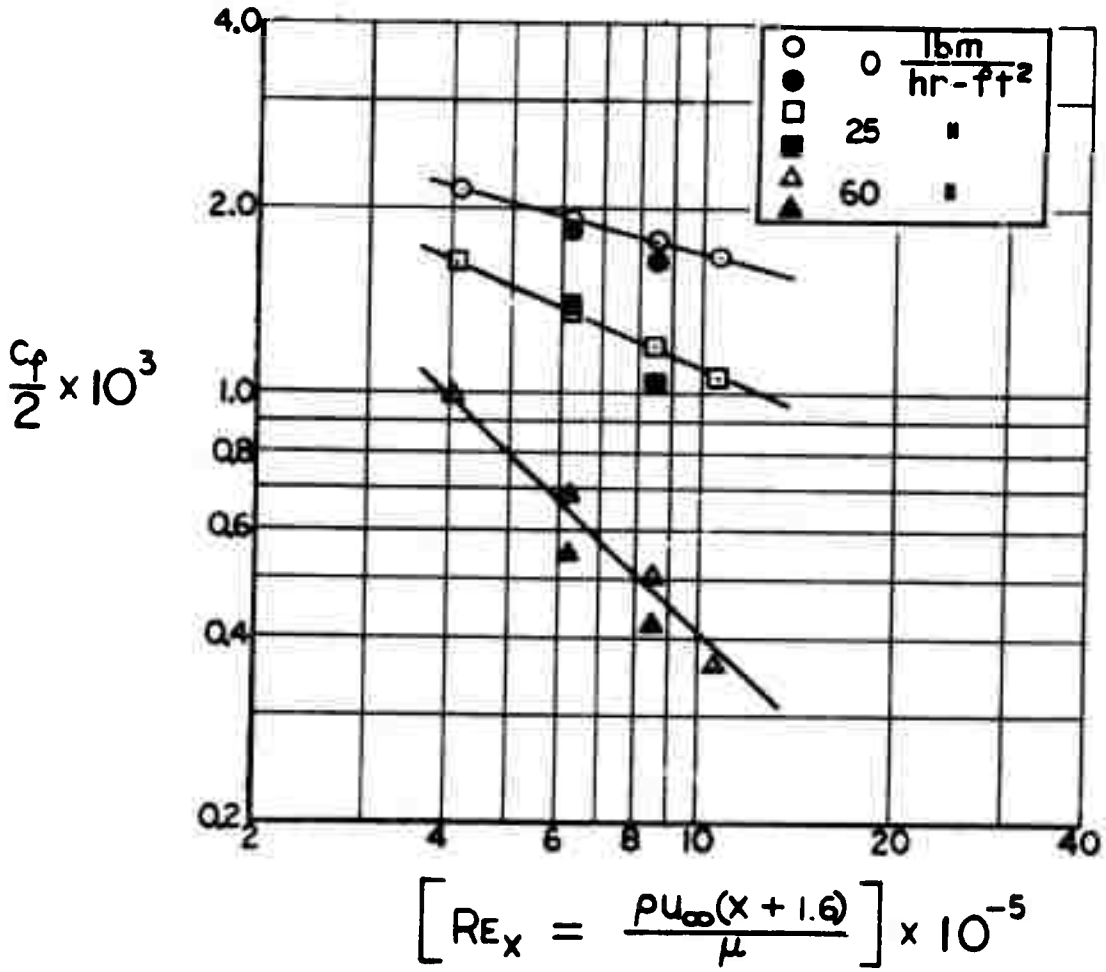

FIG. 16 FRICTION COEFFICIENT - REYNOLDS NUMBER RELATION FOR VARIOUS INJECTION RATES

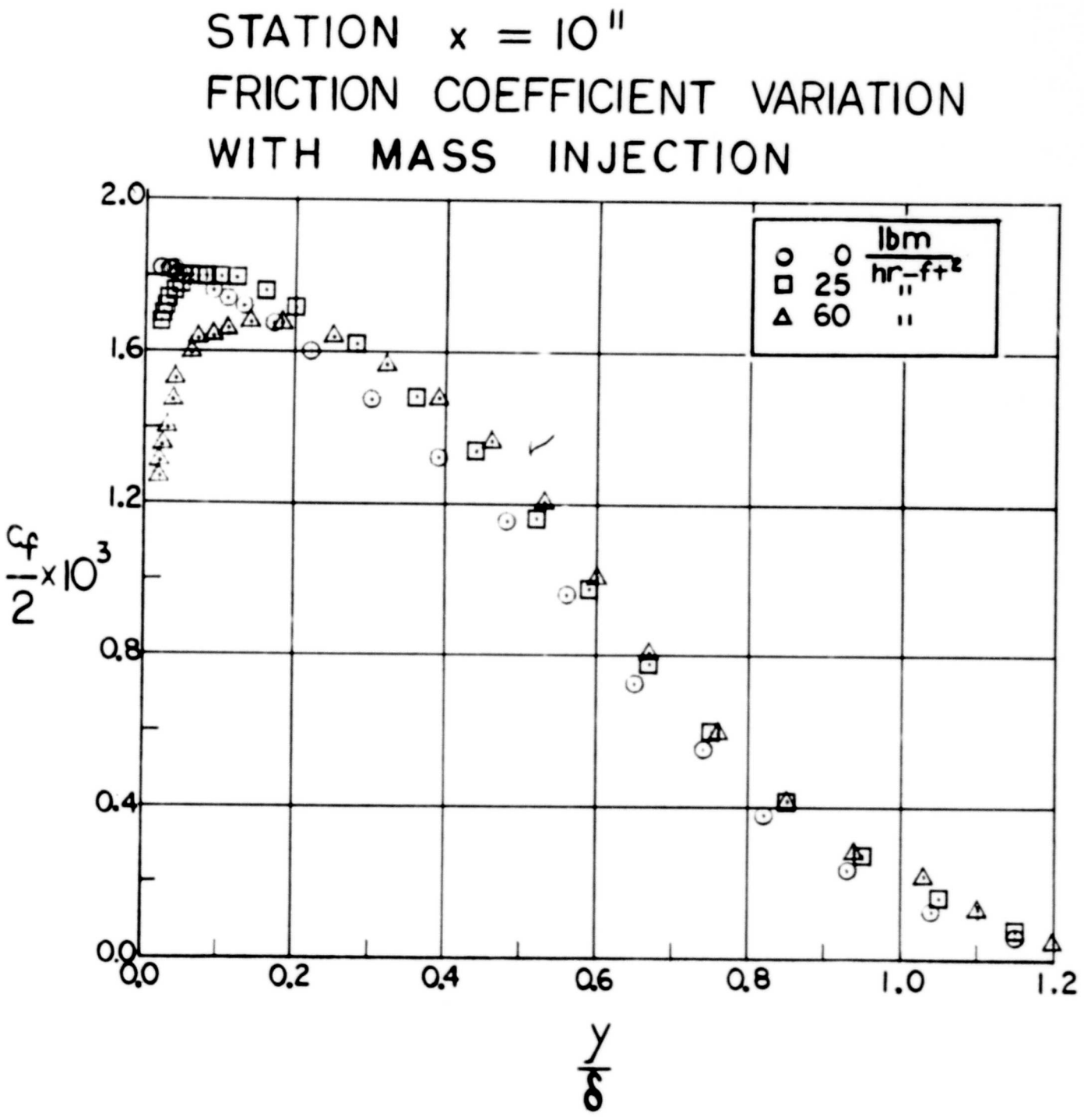

FIG. 17 EFFECT OF AIR INJECTION ON THE FRICTION COEFFICIENT DISTRIBUTION IN THE BOUNDARY LAYER, x = 10 INCHES

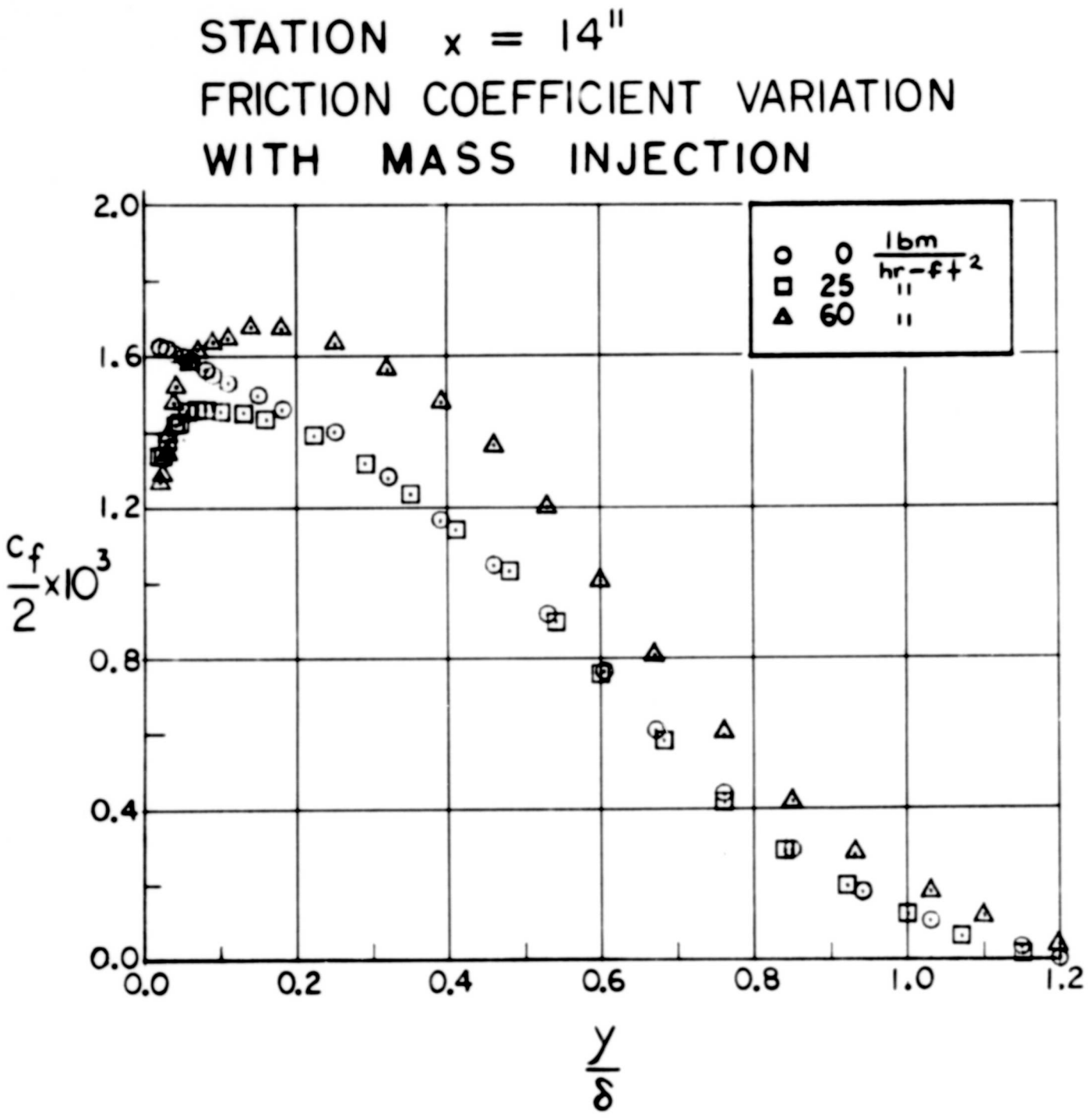

FIG. 18 EFFECT OF AIR INJECTION ON THE FRICTION COEFFICIENT DISTRIBUTION IN THE BOUNDARY LAYER, x = 14 INCHES

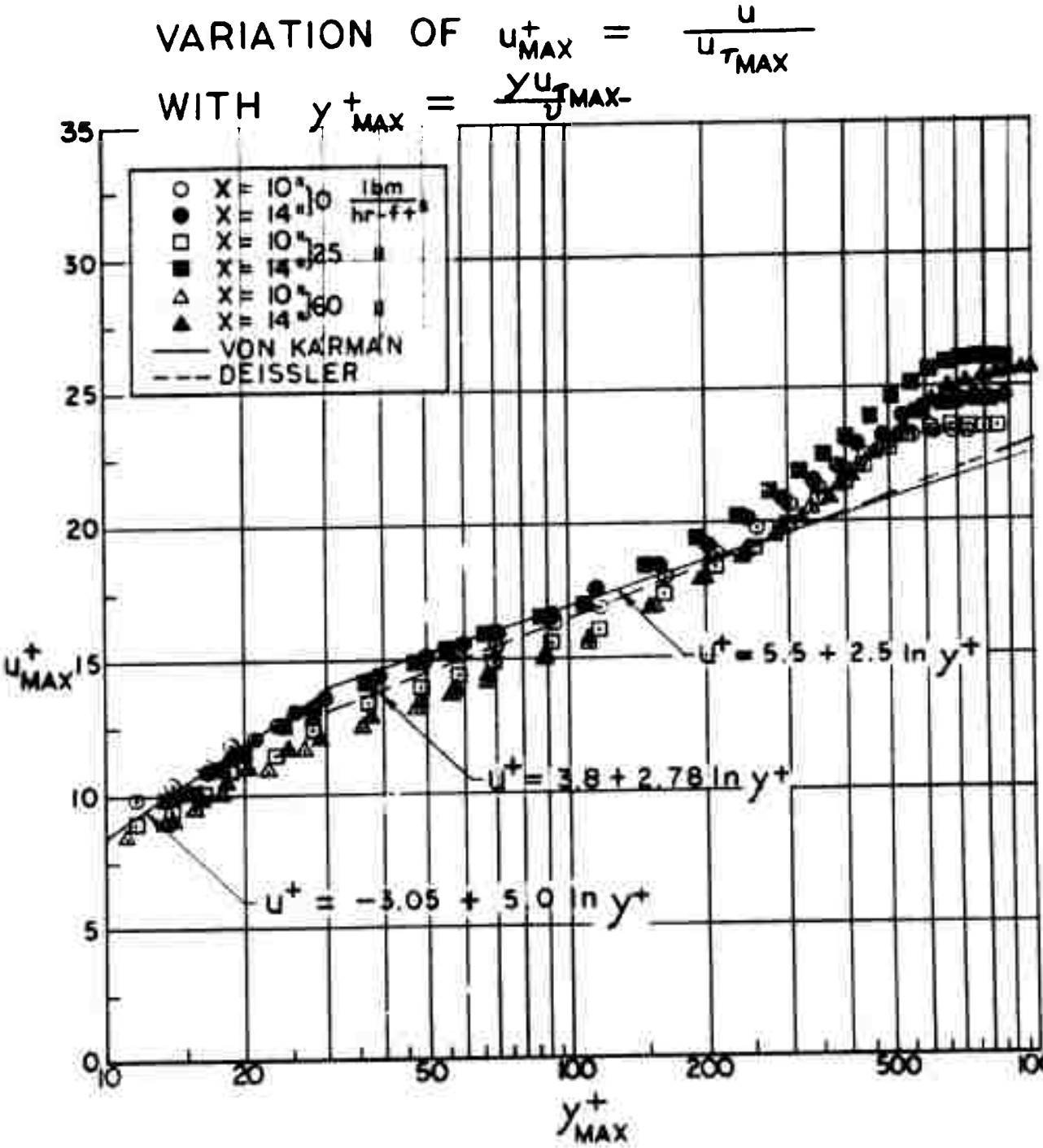

FIG. 19 UNIVERSAL VELOCITY PROFILE BASED ON MAXIMUM SHEAR STRESS VELOCITY

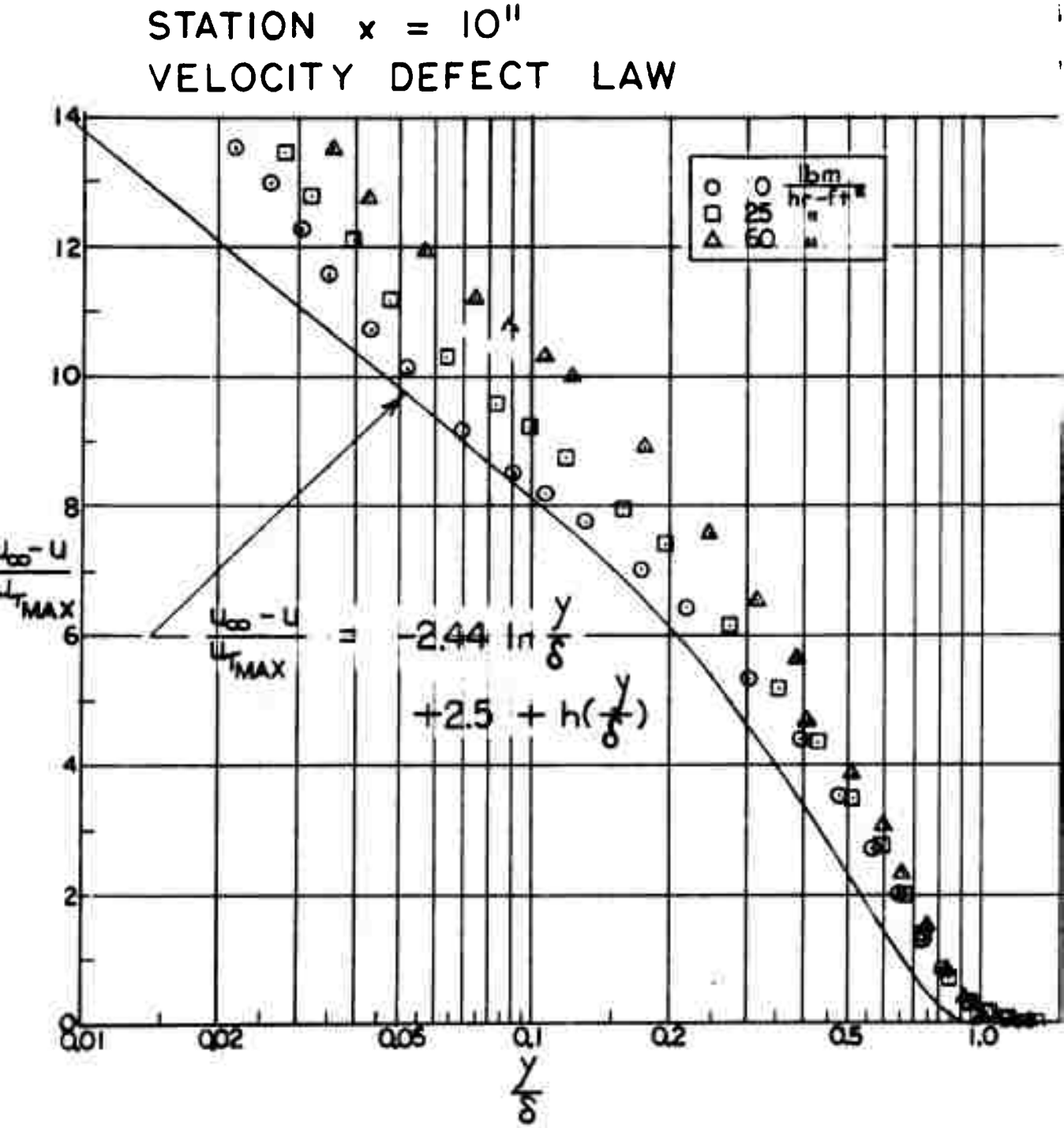

FIG. 20 VELOCITY DEFECT LAW BASED ON MAXIMUM SHEAR STRESS VELOCITY, x = 10 INCHES

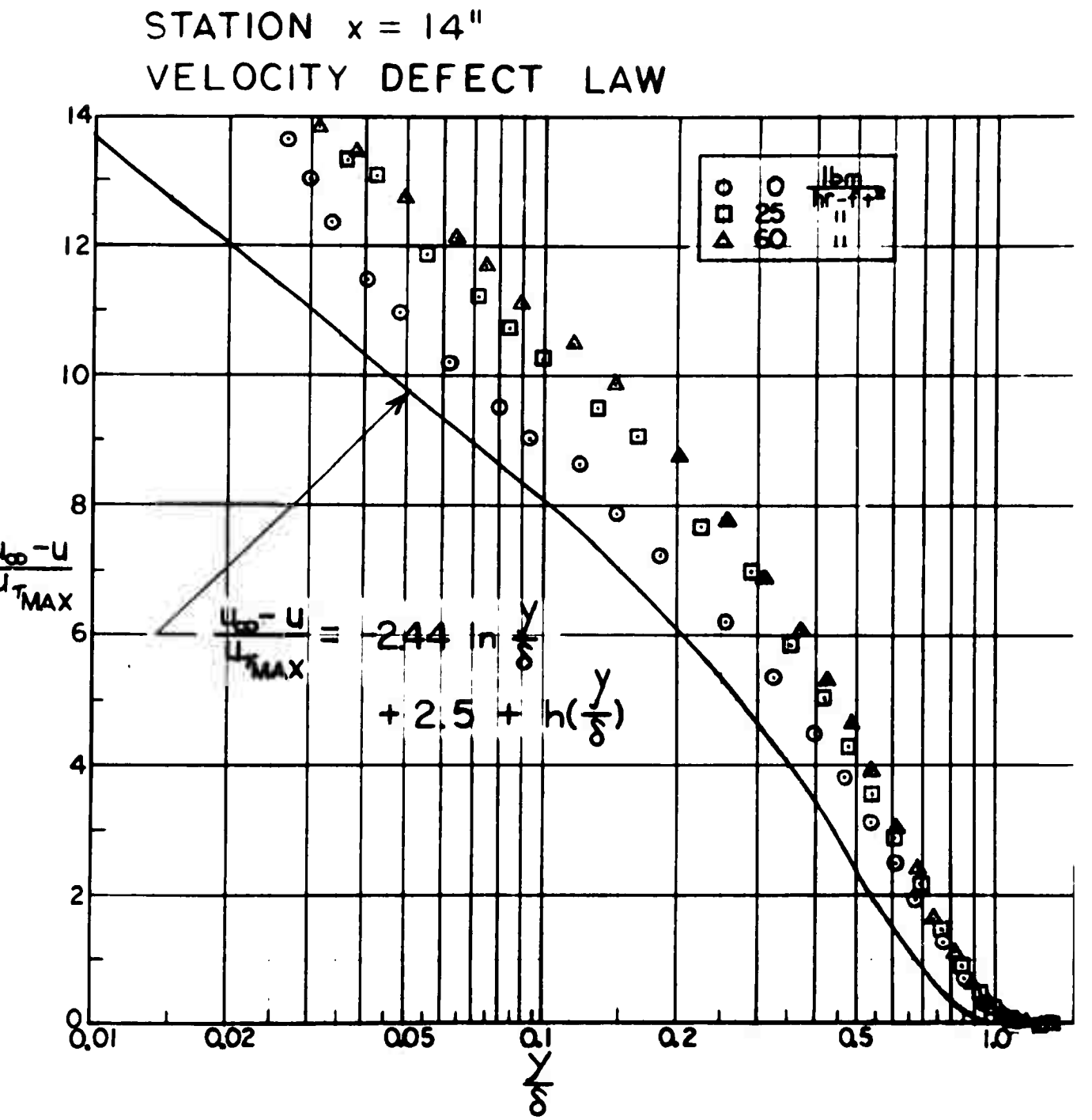

FIG. 21 VELOCITY DEFECT LAW BASED ON MAXIMUM SHEAR STRESS VELOCITY, x = 14 INCHES

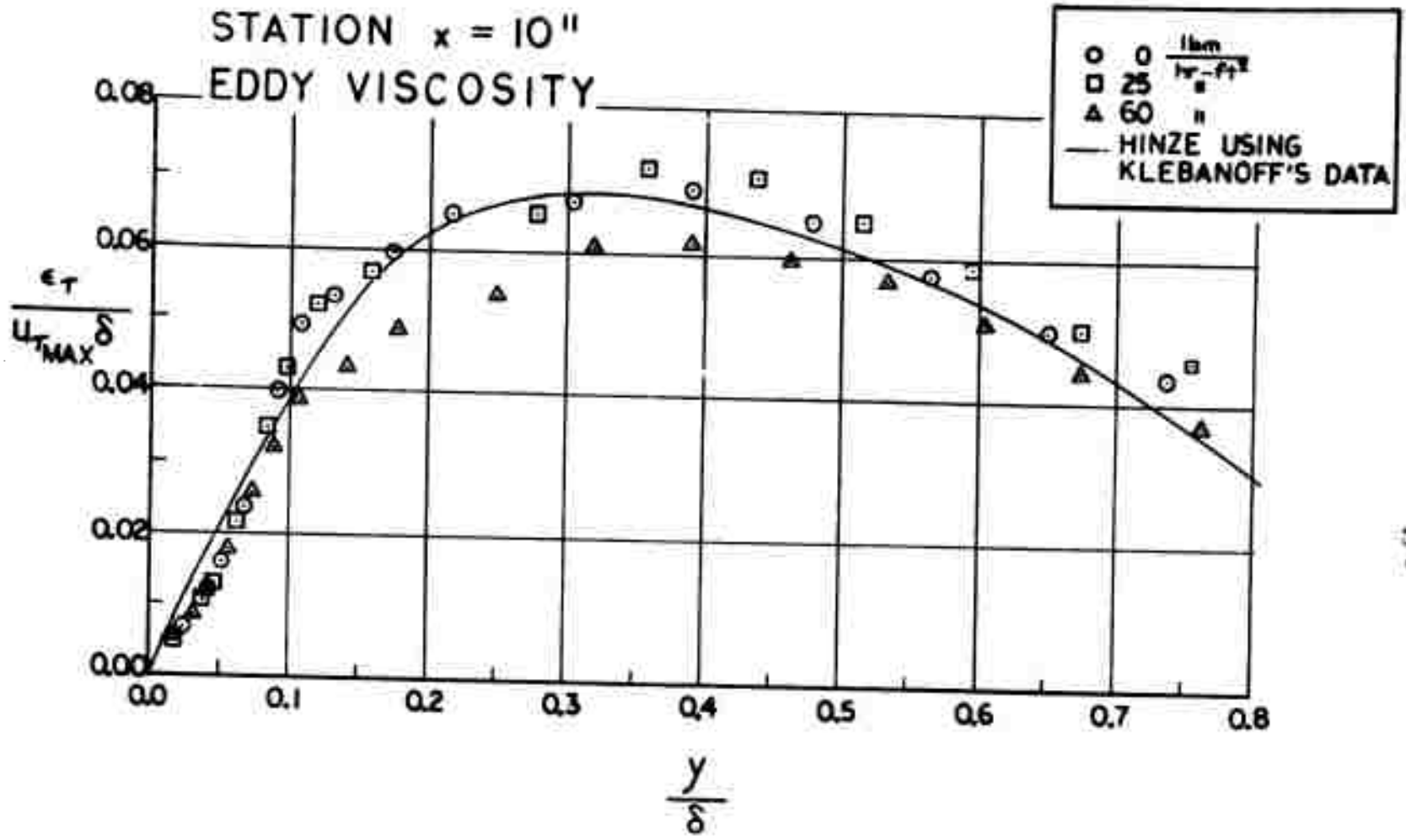

FIG. 22 DISTRIBUTION OF NORMALIZED EDDY VISCOSITY BASED ON MAXIMUM SHEAR STRESS VELOCITY, x = 10 INCHES

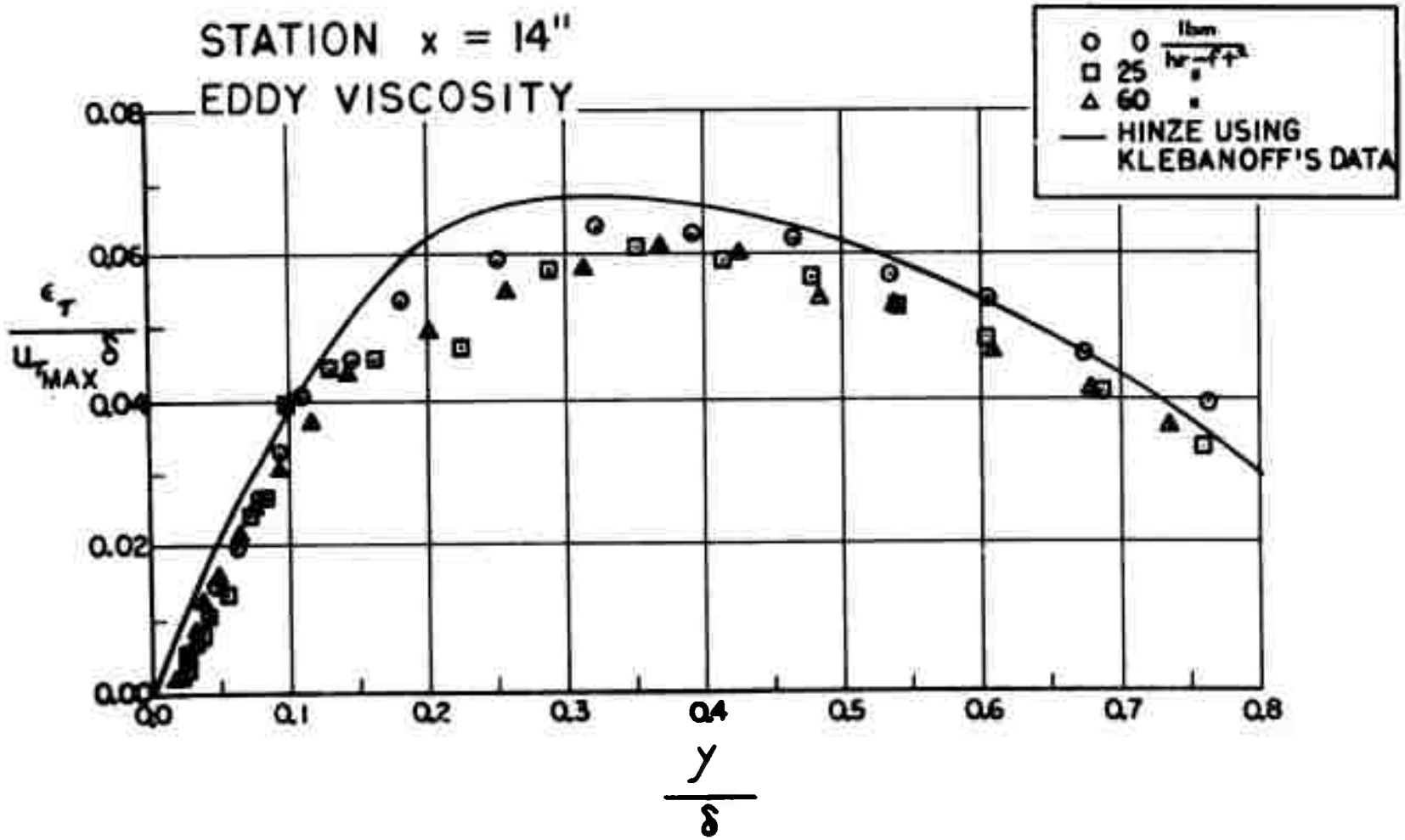

FIG. 23 DISTRIBUTION OF NORMALIZED EDDY VISCOSITY BASED ON MAXIMUM SHEAR STRESS VELOCITY, x = 14 INCHES

FIG. 24 EFFECT OF AIR INJECTION ON WALL FRICTION COEFFICIENT

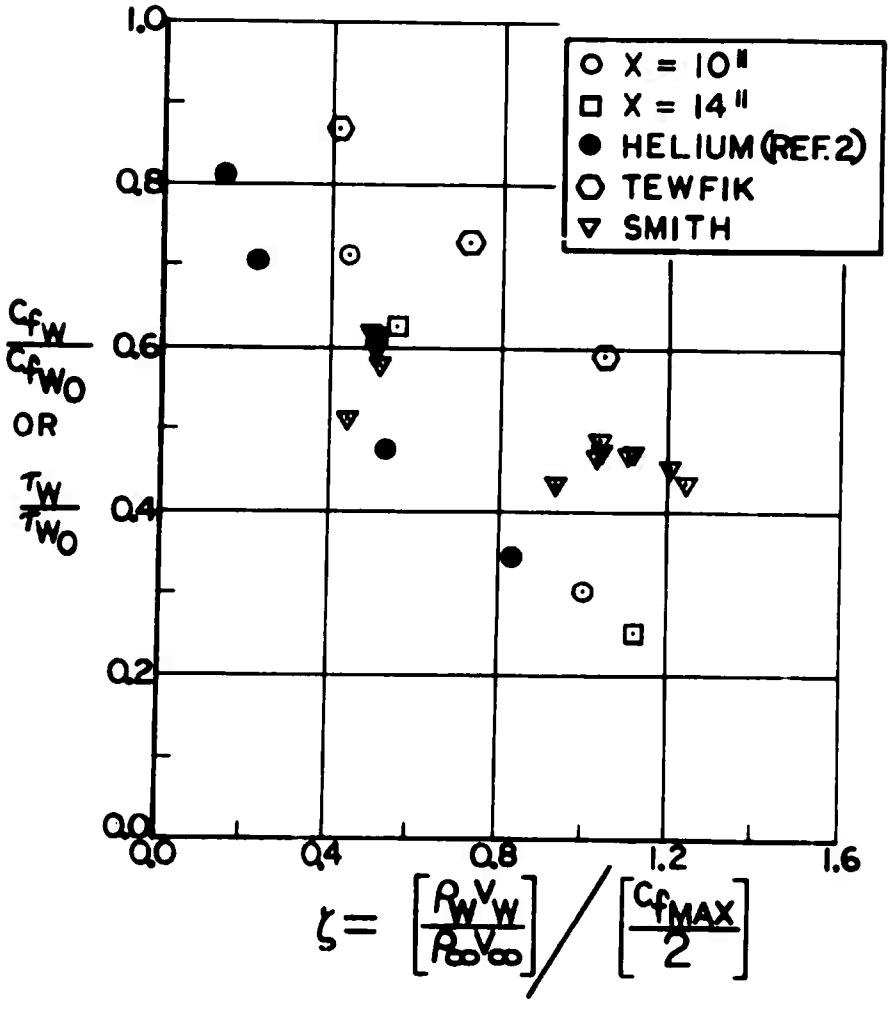

FIG. 25 CORRELATION OF THE EFFECT OF INJECTION ON WALL FRICTION COEFFICIENT

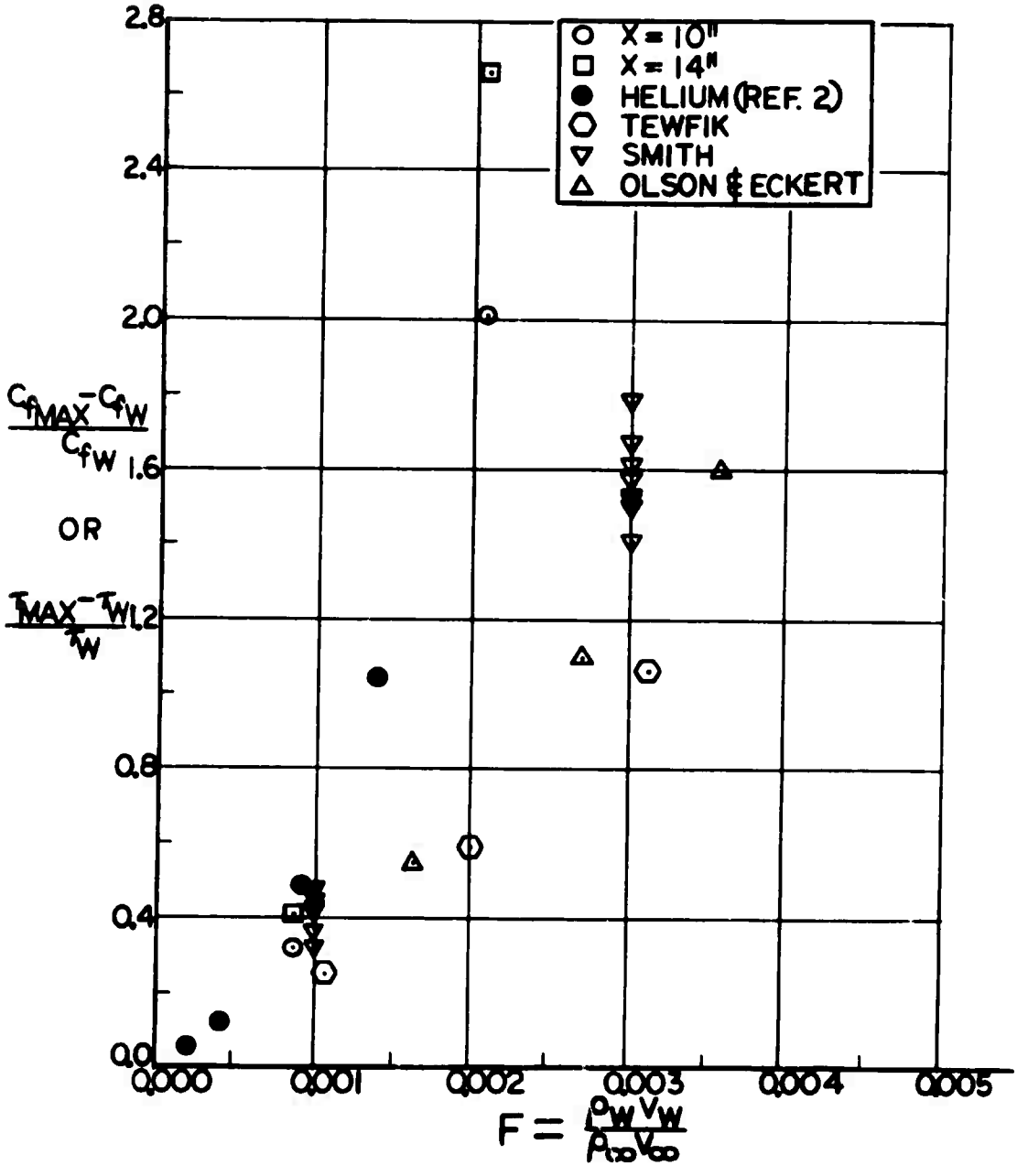

FIG. 26 EFFECT OF INJECTION ON THE DIFFERENCE BETWEEN WALL AND MAXIMUM FRICTION COEFFICIENT

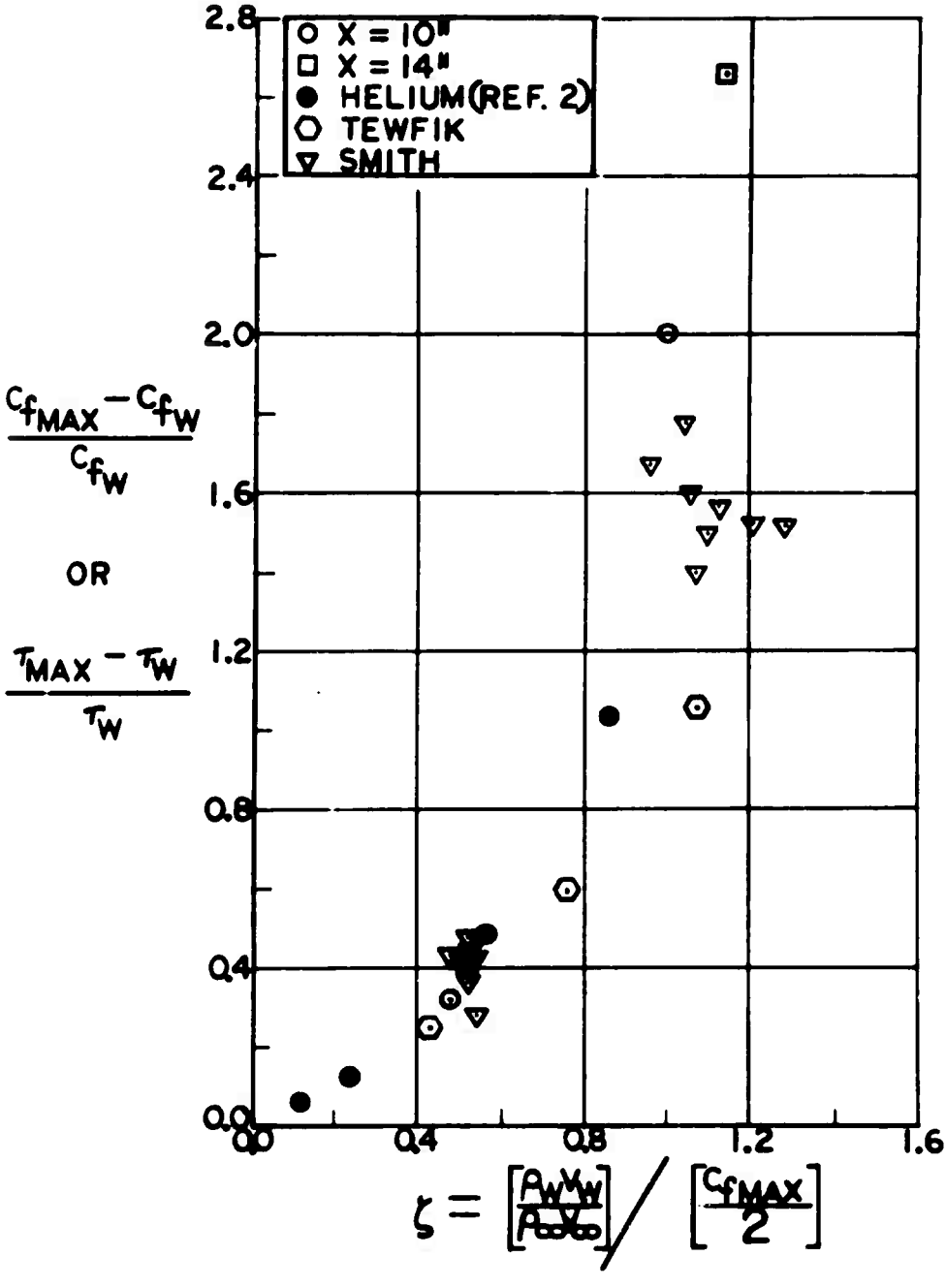

FIG. 27 CORRELATION OF THE EFFECT OF INJECTION ON THE DIFFERENCE BETWEEN WALL AND MAXIMUM FRICTION COEFFICIENT

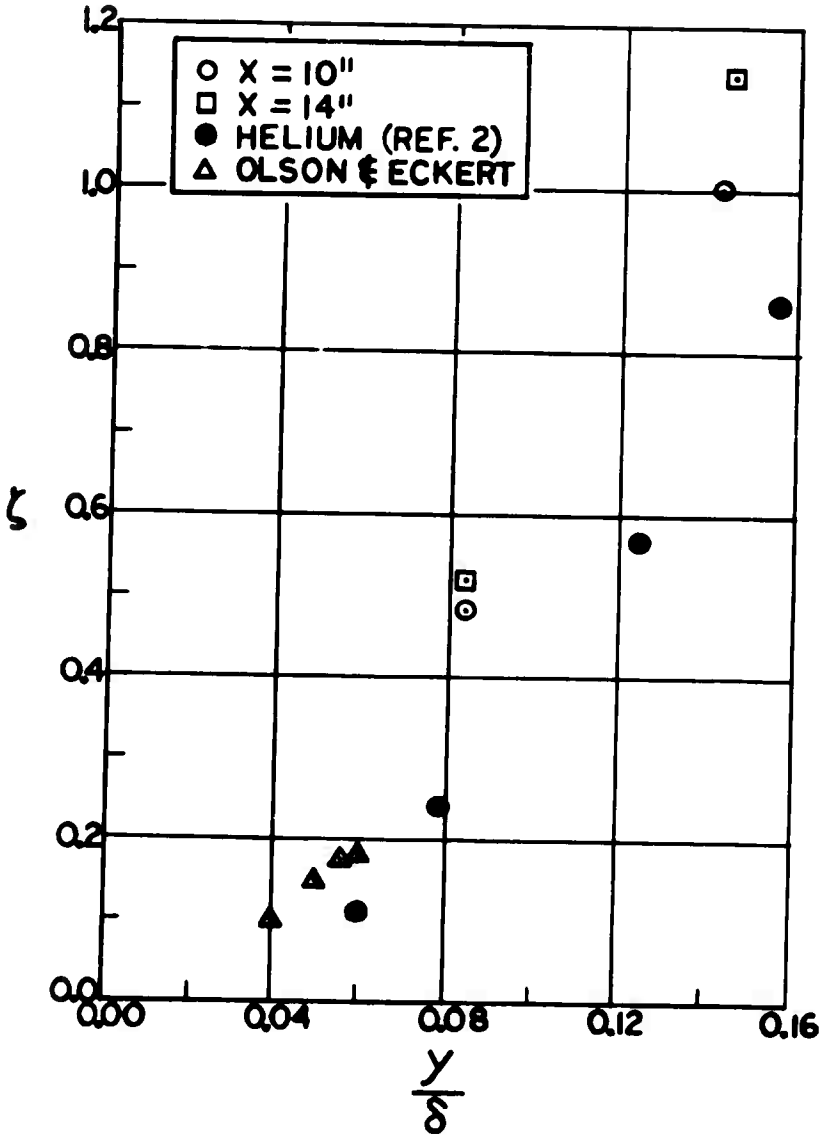

FIG. 28 CORRELATION OF THE EFFECT OF INJECTION ON THE LOCATION OF MAXIMUM SHEAR STRESS

TABULATION OF EXPERIMENTAL RESULTS

Run Schedule

A-1 through A-4	$\dot{m}$ = 0 lbm/ft^2-hr x = 6, 10, 14, 18 inches
A-5 through A-8	$\dot{m}$ = 25 lbm/ft^2-hr x = 6, 10, 14, 18 inches
A-9 through A-12	$\dot{m}$ = 60 lbm/ft^2-hr x = 6, 10, 14, 18 inches

SYMBOL LIST OVER TABLES

Run Constants

Theta — momentum thickness, inches

Delta* — displacement thickness, inches

Delta — velocity boundary layer thickness, δ(.99), inches

$U_{TAU} = U_\infty \sqrt{C_{f_w}/2}$, ft/sec

Mass = $\rho_w v_w$ - injection flux per square foot-hour

$F = \rho_w v_w / \rho_\infty u_\infty$ - measured, dimensionless

ZETA = $F/C_f/2$, dimensionless

$$C_{f_w} = \frac{\tau_w}{\frac{1}{2}\rho_\infty u_\infty^2}$$, dimensionless

A= .49750547E-02 B= .73534510E+00 CF/2= .21405554E-02 THETA CAL= .29123247E-01 X= 6.00

Y/DELTA+	Y/DELTA	Y+	Y++	UTAU+	U+	U++	1-U	(1-U)+	
0	0	0	0	5.6239E+00	0	0	2.1614E+01	2.1614E+01	1
1.3796E-01	2.7463E-02	1.1395E+01	1.1395E+01	5.6239E+00	8.7186E+00	8.7186E+00	1.2895E+01	1.2895E+01	2
1.6862E-01	3.3566E-02	1.3927E+01	1.3927E+01	5.6239E+00	8.7113E+00	8.7113E+00	1.2903E+01	1.2903E+01	3
1.9927E-01	3.9669E-02	1.6459E+01	1.6459E+01	5.6239E+00	9.9213E+00	9.9213E+00	1.1693E+01	1.1693E+01	4
2.2993E-01	4.5772E-02	1.8992E+01	1.8992E+01	5.6239E+00	1.0720E+01	1.0720E+01	1.0894E+01	1.0894E+01	5
2.9124E-01	5.7978E-02	2.4056E+01	2.4056E+01	5.6239E+00	1.1834E+01	1.1834E+01	9.7790E+00	9.7790E+00	6
3.5256E-01	7.0184E-02	2.9120E+01	2.9120E+01	5.6239E+00	1.2506E+01	1.2506E+01	9.1077E+00	9.1077E+00	7
4.7519E-01	9.4595E-02	3.9249E+01	3.9249E+01	5.6239E+00	1.3339E+01	1.3339E+01	8.2752E+00	8.2752E+00	8
6.2847E-01	1.2511E-01	5.1910E+01	5.1910E+01	5.6239E+00	1.4227E+01	1.4227E+01	7.3872E+00	7.3872E+00	9
7.5110E-01	1.4952E-01	6.2039E+01	6.2039E+01	5.6239E+00	1.4407E+01	1.4407E+01	7.2072E+00	7.2072E+00	10
9.0436E-01	1.8004E-01	7.4700E+01	7.4700E+01	5.6239E+00	1.4839E+01	1.4839E+01	6.7754E+00	6.7754E+00	11
1.2110E+00	2.4107E-01	1.0002E+02	1.0002E+02	5.6239E+00	1.5646E+01	1.5646E+01	5.9682E+00	5.9682E+00	12
1.5175E+00	3.0209E-01	1.2534E+02	1.2534E+02	5.6239E+00	1.6724E+01	1.6724E+01	4.8896E+00	4.8896E+00	13
2.1307E+00	4.2415E-01	1.7599E+02	1.7599E+02	5.6239E+00	1.7555E+01	1.7555E+01	4.0590E+00	4.0590E+00	14
2.7438E+00	5.4621E-01	2.2663E+02	2.2663E+02	5.6239E+00	1.8630E+01	1.8630E+01	2.9837E+00	2.9837E+00	15
3.3570E+00	6.6827E-01	2.7728E+02	2.7728E+02	5.6239E+00	1.9578E+01	1.9578E+01	2.0362E+00	2.0362E+00	16
3.9701E+00	7.9033E-01	3.2792E+02	3.2792E+02	5.6239E+00	2.0384E+01	2.0384E+01	1.2302E+00	1.2302E+00	17
4.5833E+00	9.1239E-01	3.7857E+02	3.7857E+02	5.6239E+00	2.1305E+01	2.1305E+01	3.0920E-01	3.0920E-01	18
5.1964E+00	1.0344E+00	4.2921E+02	4.2921E+02	5.6239E+00	2.1422E+01	2.1422E+01	1.9160E-01	1.9160E-01	19
5.8096E+00	1.1565E+00	4.7985E+02	4.7985E+02	5.6239E+00	2.1551E+01	2.1551E+01	6.2600E-02	6.2600E-02	20
6.5760E+00	1.3091E+00	5.4316E+02	5.4316E+02	5.6239E+00	2.1617E+01	2.1617E+01	-2.9802E-03	-2.9802E-03	21
7.3424E+00	1.4617E+00	6.0646E+02	6.0646E+02	5.6239E+00	2.1611E+01	2.1611E+01	2.9804E-03	2.9806E-03	22
8.1089E+00	1.6142E+00	6.6977E+02	6.6977E+02	5.6239E+00	2.1620E+01	2.1620E+01	-5.9600E-03	-5.9600E-03	23

Y	D2U/DY2	U+Y+	N2U+Y+	EM/NU-S	EM/NU-O	ET/NU-MOM	
0	4.3866E+08	0	0	0	2.9334E+01	0	1
4.5000E-03	1.2932E+08	9.9348E-01	1.1804E+00	8.1779E-01	4.1854E+02	5.0176E+02	2
5.5000E-03	6.0576E+07	1.2132E+02	1.4414E+00	1.1004E+00	1.9948E+03	7.4107E+02	3
6.5000E-03	1.1332E+07	1.6330E+02	1.9402E+00	1.6614E+00	1.9817E+05	1.9240E+03	4
7.5000E-03	-1.7835E+08	2.0359E+02	2.4189E+00	2.2034E+00	1.9778E+02	1.7451E+03	5
9.5000E-03	-7.3097E+07	2.8468E+02	3.3823E+00	3.2674E+00	2.8863E+02	1.7381E+03	6
1.1500E-02	-3.1820E+07	3.6419E+02	4.3270E+00	4.2698E+00	5.3188E+02	1.7938E+03	7
1.5500E-02	-1.5773E+07	5.2354E+02	6.2202E+00	6.2078E+00	6.1482E+02	1.6643E+03	8
2.0500E-02	-8.9790E+06	7.3852E+02	8.7744E+00	8.7736E+00	4.4291E+02	1.7926E+03	9
2.4500E-02	-1.6373 +06	8.9379E+02	1.0619E+01	1.0619E+01	2.9009E+03	1.4661E+03	10
2.9500E-02	1.7175E+06	1.1084E+03	1.3169E+01	1.3169E+01	8.8619E+03	3.7456E+03	11
3.9500E-02	-1.5376E+06	1.5649E+03	1.8593E+01	1.8594E+01	5.4907E+03	4.8068E+03	12
4.9500E-02	-1.1154E+06	2.0963E+03	2.4906E+01	2.4904E+01	5.0852E+03	5.9702E+03	13
6.9500E-02	-3.2425E+05	2.9895E+03	3.6706E+01	3.6704E+01	2.5994E+04	9.7481E+03	14
8.9500E-02	-1.1697E+04	4.2223E+03	5.0165E+01	5.0164E+01	2.1922E+07	1.4964E+04	15
1.0950E-01	-1.9029E+05	5.4285E+03	6.4496E+01	6.4494E+01	7.3699E+04	2.1543E+04	16
1.2950E-01	-4.4594E+05	6.6343E+03	7.9416E+01	7.9414E+01	8.1788E+03	2.5540E+04	17
1.4950E-01	-6.5001E+05	8.0653E+03	9.5824E+01	9.5824E+01	9.3283E+02	2.1221E+04	18
1.6950E-01	-4.5924E+05	9.1947E+03	1.0924E+02	1.0924E+02	2.7363E+01	6.6754E+03	19
1.8950E-01	-8.8306E+04	1.0342E+04	1.2287E+02	1.2287E+02	2.2227E+02	5.9876E+03	20
2.1450E-01	-6.7201E+04	1.1741E+04	1.3950E+02	1.3950E+02	1.0823E+01	2.1656E+03	21
2.3950E-01	-2.1414E+04	1.3104E+04	1.5572E+02	1.5572E+02	7.1752E-06	1.1051E+01	22
2.6450E-01	2.4009E+02	1.4480E+04	1.7204E+02	1.7204E+02	1.3579E+02	1.7994E+02	23

RUN NO. A= 1 M= 0LAM/SOFT-HR X= 6.00INCHES REYNOLDS NUMBER = 4.1596E+05

FREE STREAM PROPERTIES PS=3.8780 PT=3.6280 T=107.98 UINF= 121.548 FT/SEC RHO= .0678730 LBM/CUBICFT

THETA= .22014E-01 DELTA*= .32619E-01 DELTA= .16386E+00

Y INCHES	U/UINF	R	Y/TINF	MU*DU/DY	UTAU= DU/DY	0 ALPHA	BETA	Y/DELTA	
C	0	0	1.0000E+00	5.1174E-01	4.1276E+04	0	0	0	1
4.5000E-03	4.0338E-01	2.6301E+02	1.0000E+00	5.497AE-01	4.4291E+04	1.0106E-03	3.[illegible]	2.74638E-02	2
5.5000E-03	4.0304E-01	3.2144E+02	1.0000E+00	5.902[illegible]E-01	4.[illegible]72E+04	1.4108E-03	5.[illegible]	3.3566E-02	3
6.5000E-03	4.5902E-01	3.7991E+02	1.0000E+00	8.003[illegible]E-01	6.[illegible]77E+04	1.8599E-03	7.[illegible]	3.9686E-02	4
7.5000E-03	4.9598E-01	4.3834E+02	1.0000E+00	5.305[illegible]E-01	4.2744E+04	2.3385E-03	9.[illegible]	4.5772E-02	5
9.5000E-03	5.4752E-01	5.5525E+02	1.0000E+00	3.289AE-01	2.[illegible]83E+04	3.3874E-03	1.[illegible]	5.7978E-02	6
1.1500E-02	5.7862E-01	6.7215E+02	1.0000E+00	2.338[illegible]E-01	1.[illegible]83E+04	4.5153E-03	2.[illegible]	7.0184E-02	7
1.5500E-02	6.1714E-01	9.0594E+02	1.0000E+00	1.537[illegible]E-01	1.2383E+04	6.0459E-03	3.[illegible]	9.4995E-02	8
2.0500E-02	6.5022E-01	1.1982E+03	1.0000E+00	9.464[illegible]E-02	7.6245E+03	1.0186E-02	5.[illegible]	1.2511E-01	9
2.4500E-02	6.6655E-01	1.4320E+03	1.0000E+00	5.4194E-02	4.3659E+03	1.2882E-02	7.[illegible]	1.4952E-01	10
2.9500E-02	6.8653E-01	1.7242E+03	1.0000E+00	3.5299E-02	6.8717E+03	1.4356E-02	9.[illegible]	1.8044E-01	11
3.9500E-02	7.2387E-01	2.3087E+03	1.0000E+00	6.8357E-02	5.5069E+03	2.3705E-02	1.[illegible]	2.4137E-01	12
4.9500E-02	7.7378E-01	2.8932E+03	1.0000E+00	5.315AE-02	4.2823E+03	3.1496E-02	2.[illegible]	3.0229E-01	13
6.9500E-02	8.1221E-01	4.0621E+03	1.0000E+00	4.018[illegible]E-02	3.2373E+03	4.8232E-02	3.[illegible]	4.2413E-01	14
8.9500E-02	8.6196E-01	5.2311E+03	1.0000E+00	4.144AE-02	3.3391E+03	6.4343E-02	4.[illegible]	5.4621E-01	15
1.0950E-01	9.0579E-01	6.4000E+03	1.0000E+00	3.986[illegible]E-02	3.2116E+03	8.5758E-02	6.[illegible]	6.6827E-01	16
1.2950E-01	9.4309 -01	7.5690E+03	1.0000E+00	3.379[illegible]E-02	2.7222E+03	1.0657E-01	8.[illegible]	7.9033E-01	17
1.4950E-01	9.8569E-01	8.7379E+03	1.0000E+00	2.1067E-02	1.6971E+03	1.2856E-01	1.[illegible]	9.1239E-01	18
1.6950E-01	9.9114E-01	9.9069E+03	1.0000E+00	5.155[illegible]E-03	4.1531E+02	1.5143E-01	1.[illegible]	1.0344E+00	19
1.8950E-01	9.9710E-01	1.1074E+04	1.0000E+00	3.4524E-03	2.7813E+02	1.7489E-01	1.[illegible]	1.1565E+00	20
2.1450E-01	1.0001E+00	1.2537E+04	1.0000E+00	1.044[illegible]E-03	8.4132E+01	2.0489E-01	1.[illegible]	1.3091E+00	21
2.3950E-01	9.9986E-01	[illegible]399AE+04	1.0000E+00	4.2747E-04	3.4437E-01	2.3556E-01	2.[illegible]	1.4617E+00	22
2.6450E-01	1.0003E+00	[illegible]5459E+04	1.0000E+00	5.7067E-05	4.5974E+00	2.6606E-01	2.[illegible]	1.6143E+00	23

A= .4976U547E-02 B= .73534510E+00 CF/2= .19139213E-02 THETA CAL= .30191930E-01 X=10.00

Y/DELTA*	Y/DELTA	Y+	Y++	UT/U*	U+	U++	1-U	1-U/U*	
0	0	0	0	5.3251E+00	0	0	2.9858E-01	2.9858E-01	1
1.1485E-01	2.1690E-02	1.1891E+01	1.1891E+01	5.3251E+00	9.6274E+00	9.4274E+00	1.9231E-01	1.9231E-01	2
1.3782E-01	2.6028E-02	1.4269E+01	1.4269E+01	5.3251E+00	1.0139E+01	1.0139E+01	1.9710E-01	1.9710E-01	3
1.6079E-01	3.0366E-02	1.6647E+01	1.6647E+01	5.3251E+00	1.0841E+01	1.0841E+01	1.2017E-01	1.2017E-01	4
1.8376E-01	3.4704E-02	1.9026E+01	1.9026E+01	5.3251E+00	1.1519E+01	1.1519E+01	1.1330E-01	1.1330E-01	5
2.2970E-01	4.3379E-02	2.3782E+01	2.3782E+01	5.3251E+00	1.2382E+01	1.2382E+01	1.0476E-01	1.0476E-01	6
2.7564E-01	5.2055E-02	2.8539E+01	2.8539E+01	5.3251E+00	1.2952E+01	1.2952E+01	9.9057E-02	9.9057E-02	7
3.6751E-01	6.9407E-02	3.8051E+01	3.8051E+01	5.3251E+00	1.3878E+01	1.3878E+01	8.9802E-02	8.9802E-02	8
4.8234E-01	9.1097E-02	4.9942E+01	4.9942E+01	5.3251E+00	1.4528E+01	1.4528E+01	8.3296E-02	8.3296E-02	9
5.7424E-01	1.0845E-01	5.9455E+01	5.9455E+01	5.3251E+00	1.4809E+01	1.4809E+01	8.0491E-02	8.0491E-02	10
6.8906E-01	1.3014E-01	7.1346E+01	7.1346E+01	5.3251E+00	1.5232E+01	1.5232E+01	7.6262E-02	7.6262E-02	11
9.1871E-01	1.7352E-01	9.5128E+01	9.5128E+01	5.3251E+00	1.5650E+01	1.5650E+01	7.2095E-02	7.2095E-02	12
1.1485E+00	2.1690E-01	1.1891E+02	1.1891E+02	5.3251E+00	1.6514E+01	1.6514E+01	6.3437E-02	6.3437E-02	13
1.6079E+00	3.0366E-01	1.6647E+02	1.6647E+02	5.3251E+00	1.7614E+01	1.7614E+01	5.2438E-02	5.2438E-02	14
2.0673E+00	3.9041E-01	2.1404E+02	2.1404E+02	5.3251E+00	1.8521E+01	1.8521E+01	4.3360E-02	4.3360E-02	15
2.5267E+00	4.7717E-01	2.6160E+02	2.6160E+02	5.3251E+00	1.9368E+01	1.9368E+01	3.4984E-02	3.4984E-02	16
2.9860E+00	5.6393 -01	3.0917E+02	3.0917E+02	5.3251E+00	2.0163E+01	2.0163E+01	2.6948E-02	2.6948E-02	17
3.4454E+00	6.5069E-01	3.5673E+02	3.5673E+02	5.3251E+00	2.0860E+01	2.0860E+01	1.9970E-02	1.9970E-02	18
3.9048E+00	7.3745E-01	4.0430E+02	4.0430E+02	5.3251E+00	2.1514E+01	2.1514E+01	1.3438E-02	1.3438E-02	19
4.3642E+00	8.2421E-01	4.5186E+02	4.5186E+02	5.3251E+00	2.2005E+01	2.2005E+01	8.5270E-03	8.5270E-03	20
4.9385E+00	9.3266E-01	5.1132E+02	5.1132E+02	5.3251E+00	2.2476E+01	2.2476E+01	3.8216E-03	3.8216E-03	21
5.5127E+00	1.0411E+00	5.7077E+02	5.7077E+02	5.3251E+00	2.2738E+01	2.2738E+01	1.2032E-03	1.2032E-03	22
6.0869E+00	1.1496E+00	6.3023E+02	6.3023E+02	5.3251E+00	2.2823E+01	2.2823E+01	3.4765E-02	3.4765E-02	23
6.6612E+00	1.2580E+00	6.8968E+02	6.8968E+02	5.3251E+00	2.2858E+01	2.2858E+01	0	0	24
7.2354E+00	1.3665E+00	7.4914E+02	7.4914E+02	5.3251E+00	2.2858E+01	2.2858E+01	0	0	25

Y	D2U/DY2	U+Y+	N2U+Y+	EM/NU-S	EM/NU-0	ET/MU-MOM	
0	5.1639E+07	0	0	0	7.8128E+03	0	1
5.0000E-03	-1.9613E+07	1.1448E+02	1.3601E+00	1.0114E+00	1.8809E+04	6.9478E+02	2
6.0000E-03	-3.3863E+07	1.4467E+02	1.7189E+00	1.4107E+00	4.9548E+03	8.3207E+02	3
7.0000E-03	-4.9547E+07	1.8047E+02	2.1442E+00	1.8929E+00	2.5574E+03	1.1709E+03	4
8.0000E-03	-9.4259E+07	2.1915E+02	2.6037E+00	2.4114E+00	2.0870E+02	1.1349E+03	5
1.0000E-02	-4.5414E+07	2.9448E+02	3.4987E+00	3.3924E+00	4.2014E+02	1.2427E+03	6
1.2000E-02	-2.4780E+07	3.6964E+02	4.3917E+00	4.3279E+00	6.1821E+02	1.3491E+03	7
1.6000E-02	-1.4428E+07	5.2807E+02	6.2740E+00	6.2029E+00	9.1819E+02	1.5765E+03	8
2.1000E-02	-7.4076E+06	7.2558E+02	8.6207E+00	8.6194E+00	3.9529E+02	1.5931E+03	9
2.5000E-02	-2.4236E+06	8.8047E+02	1.0461E+01	1.0461E+01	1.9804E+03	1.8283E+03	10
3.0000E-02	-9.7791E+05	1.0867E+03	1.2911E+01	1.2914E+01	9.8571E+03	2.3942E+03	11
4.0000E-02	-6.9453E+05	1.5181E+03	1.8037E+01	1.8037E+01	1.1401E+04	3.4647E+03	12
5.0000E-02	-4.0205E+05	1.9637E+03	2.3331E+01	2.3334E+01	2.3145E+04	5.0273E+03	13
7.0000E-02	-2.3133E+05	2.9323E+03	3.4839E+01	3.4838E+01	4.8028E+04	9.7477E+03	14
9.0000E-02	-1.7975E+05	3.9642E+03	4.7099E+01	4.7099E+01	9.5119E+04	1.9718E+04	15
1.1000E-01	-1.1722E+05	5.0645E+03	6.0172E+01	6.0173E+01	1.8414E+05	1.7662E+04	16
1.3000E-01	-1.3638E+05	6.2338E+03	7.4064E+01	7.4064E+01	6.1975E+04	2.2948E+04	17
1.5000E-01	-1.7966E+05	7.4414E+03	8.8412E+01	8.8413E+01	2.4731E+04	2.7037E+04	18
1.7000E-01	-2.1770E+05	8.6981E+03	1.0334E+02	1.0334E+02	1.0529E+04	2.0697E+04	19
1.9000E-01	-2.4961E+05	9.9433E+03	1.1814E+02	1.1814E+02	5.4139E+03	2.8440E+04	20
2.1500E-01	-2.2971E+05	1.1492E+04	1.3654E+02	1.3654E+02	1.1488E+03	2.3467E+04	21
2.4000E-01	-1.8260E+05	1.2979E+04	1.5419E+02	1.5419E+02	1.9991E+02	1.4046E+04	22
2.6500E-01	-9.7342E+04	1.4384E+04	1.7089E+02	1.7089E+02	2.6228E+01	5.7192E+03	23
2.9000E-01	-3.5324E+04	1.5765E+04	1.8730E+02	1.8730E+02	5.1912E+00	2.0307E+03	24
3.1500E-01	-1.1395E+04	1.7124E+04	2.0345E+02	2.0344E+02	-2.1714E-01	-8.4279E-03	25

RUN NO. A= 2 M= OLAM/SQFT--R X=10.00INCHES REYNOLDS NUMBER = 6.3059E+05

FREE STREAM PROPERTIES PS=4.1451 PT=3.6190 T=112.12 UINF= 121.791 FT/SEC RHO= .0665245 LBM/CUBICFT

THETA= .30391E-01 DELTA*= .43536E-01 DELTA= .23092E+00 UTAU=

Y INCHES	U/UINF	R	T/TINF	MU*DU/DY	DU/DY	ALPHA	BETA	Y/DELTA	
0	0	0	1.0000E+00	7.6287E-01	6.1457E+04	0	0	0	1
5.0000E-03	4.2119E-01	2.9265E+02	1.0000E+00	5.5454E-01	4.4671E+04	1.2128E-03	4.7193E-04	2.1690E-02	2
4.0000E-03	4.4355E-01	3.5119E+02	1.0000E+00	5.1283E-01	4.1314E+04	1.4479E-03	6.4008E-04	2.6024E-02	3
7.0000E-03	4.7426E-01	4.0977E+02	1.0000E+00	5.3021E-01	4.2714E+04	2.1127E-03	8.7500E-04	3.0366E-02	4
8.0000E-03	5.0392E-01	4.6825E+02	1.0000E+00	3.9344E-01	3.1698E+04	2.4053E-03	1.1166E-03	3.4704E-02	5
1.0000E-02	5.4171E-01	5.8531E+02	1.0000E+00	2.7973E-01	2.2213E+04	3.4558E-03	1.4648E-03	4.3370E-02	6
1.2000E-02	5.6664E-01	7.0237E+02	1.0000E+00	2.0788E-01	1.6747E+04	4.7742E-03	2.2849E-03	5.2059E-02	7
1.6000E-02	6.0713E-01	9.3649E+02	1.0000E+00	1.3664E-01	1.1008E+04	7.1568E-03	3.4873E-03	6.9407E-02	8
2.1000E-02	6.3550E-01	1.2291E+03	1.0000E+00	8.0151E-02	6.4570E+03	1.0313E-02	5.4453E-03	9.1097E-02	9
2.5000E-02	6.4787E-01	1.4633E+03	1.0000E+00	6.4907E-02	5.2289E+03	1.2935E-02	7.2253E-03	1.0845E-01	10
3.0000E-02	6.6637E-01	1.7559E+03	1.0000E+00	5.9024E-02	4.7550E+03	1.4315E-02	9.9507E-03	1.3014E-01	11
4.0000E-02	6.9816E-01	2.3412E+03	1.0000E+00	5.0020E-02	4.0941E+03	2.3388E-02	1.4358E-02	1.7352E-01	12
5.0000E-02	7.2247E-01	2.9265E+03	1.0000E+00	4.4618E-02	3.5944E+03	3.0788E-02	1.8630E-02	2.1690E-01	13
7.0000E-02	7.7059E-01	4.0972E+03	1.0000E+00	3.9614E-02	3.1911E+03	4.4625E-02	3.1470E-02	3.0366E-01	14
9.0000E-02	8.1027E-01	5.2678E+03	1.0000E+00	3.4838E-02	2.8065E+03	6.3494E-02	4.4965E-02	3.9041E-01	15
1.1000E-01	8.4695E-01	6.4384E+03	1.0000E+00	3.2388E-02	2.6090E+03	8.1936E-02	6.8094E-02	4.7717E-01	16
1.3000E-01	8.8211E-01	7.6090E+03	1.0000E+00	3.0128E-02	2.4271E+03	1.0131E-01	7.4854E-02	5.6393E-01	17
1.5000E-01	9.1256E-01	8.7796E+03	1.0000E+00	2.6662E-02	2.1479E+03	1.2179E-01	9.9253E-02	6.5069E-01	18
1.7000E-01	9.4121E-01	9.9502E+03	1.0000E+00	2.2804E-02	1.8368E+03	1.4331E-01	1.1522E-01	7.3745E-01	19
1.9000E-01	9.6269E-01	1.1121E+04	1.0000E+00	1.7488E-02	1.4082E+03	1.6578E-01	1.3664E-01	8.2421E-01	20
2.1500E-01	9.8328E-01	1.2584E+04	1.0000E+00	1.1264E-02	9.0743E+02	1.9506E-01	1.6515E-01	9.3266E-01	21
2.4000E-01	9.9474E-01	1.4047E+04	1.0000E+00	5.4107E-03	4.3589E+02	2.2541E-01	1.9517E-01	1.0411E+00	22
2.6500E-01	9.9848E-01	1.5511E+04	1.0000E+00	1.8078E-03	1.4557E+02	2.5661E-01	2.2629E-01	1.1496E+00	23
2.9000E-01	1.0000E+00	1.6974E+04	1.0000E+00	5.3574E-04	4.3161E+01	2.8952E-01	2.5814E-01	1.2580E+00	24
3.1500E-01	1.0000E+00	1.8437E+04	1.0000E+00	-1.8844E-11	-1.5182E-06	3.2108E-01	2.9069E-01	1.3664E+00	25

THE MAX SHEAR AT POINT 1 IS CF/CFW = 1.00000E+00

	Y/DELTA	(UMAX-U)/UTMAX	EPST/UTMAX*DELTA	Y*MAX	U*MAX	CF/2
1	0	2.3331E+01	0	0	0	1.8370E-03
2	2.1690E-02	1.3505E+01	5.9260E-03	1.1650E+01	9.8260E+00	1.8239E-03
3	2.6028E-02	1.2983E+01	6.4037E-03	1.3980E+01	1.0349E+01	1.8228E-03
4	3.0366E-02	1.2266E+01	6.1881E-03	1.6310E+01	1.1065E+01	1.8211E-03
5	3.4704E-02	1.1574E+01	6.3259E-03	1.8640E+01	1.1757E+01	1.8182E-03
6	4.3379E-02	1.0693E+01	1.1833E-02	2.3299E+01	1.2630E+01	1.8110E-03
7	5.2055E-02	1.0111E+01	1.5627E-02	2.7959E+01	1.3221E+01	1.8031E-03
8	6.9407E-02	9.1662E+00	2.3549E-02	3.7279E+01	1.4169E+01	1.7860E-03
9	9.1097E-02	8.5021E+00	3.9633E-02	4.8929E+01	1.4820E+01	1.7632E-03
10	1.0845E-01	8.2158E+00	4.8432E-02	5.8249E+01	1.5114E+01	1.7448E-03
11	1.3014E-01	7.7841E+00	5.2565E-02	6.9898E+01	1.5547E+01	1.7221E-03
12	1.7352E-01	7.0424E+00	5.9142E-02	9.3198E+01	1.6289E+01	1.6883E-03
13	2.1690E-01	6.4751E+00	6.4825E-02	1.1650E+02	1.6856E+01	1.6054E-03
14	3.0366E-01	5.3525E+00	6.6968E-02	1.6310E+02	1.7970E+01	1.4724E-03
15	3.9041E-01	4.4267E+00	6.8540E-02	2.0970E+02	1.8909E+01	1.3253E-03
16	4.7717E-01	3.5709E+00	6.4386E-02	2.5629E+02	1.9761E+01	1.1574E-03
17	5.6393E-01	2.7506E+00	5.7233E-02	3.0289E+02	2.0581E+01	9.5706E-04
18	6.5069E-01	2.0393E+00	4.9648E-02	3.4949E+02	2.1299E+01	7.3472E-04
19	7.3745E-01	1.3716E+00	4.3170E-02	3.9609E+02	2.1960E+01	5.4632E-04
20	8.2421E-01	8.7046E-01	3.9629E-02	4.4269E+02	2.2461E+01	3.8449E-04
21	9.3206E-01	3.9008E-01	3.7292E-02	5.0894E+02	2.2941E+01	2.3315E-04
22	1.0421E+00	1.2282E-01	4.3274E-02	5.5919E+02	2.3200E+01	1.2996E-04
23	1.1496E+00	3.5485E-02	6.1455E-02	6.1744E+02	2.3204E+01	6.1638E-05
24	1.2500E+00	0	4.8920E-02	6.7568E+02	2.3331E+01	1.4428E-05
25	1.3669E+00	0	0	7.3393E+02	2.3331E+01	0

(CFMAX - CFWALL)/2 = 0

(CFMAX - CFWALL)/CFMAX = 0

(CFMAX - CFWALL)0CFWALL = 0

MASS= 1 x=10.0 INCHES F= 0 ZETA= 0

Y INCHES	R*	CF/2	EPSILON T	EPSILON C	CF/CFW	E-T/MU	F-D/D12	SC*	
0	0	1.A370E-03	0	0	1.0000E+00	0	0	0	1
5.0000E-03	2.7271E+02	1.A239E-03	4.0418E-05	2.243AE-05	9.9284E-01	3.2561E+00	2.9178E-02	0	2
6.0000E-03	3.272AE+02	1.A22AE-03	4.3477E-05	1.7503E-05	9.9225E-01	3.5186E+00	2.9281E-02	0	3
7.0001E-03	3.8170E+02	1.A211E-03	4.2206E-05	2.286AE-05	9.9134E-01	3.4802E+00	2.9727E-02	0	4
8.0001E-03	4.3633E+02	1.A182E-03	5.4784E-05	1.9000E-05	9.8976E-01	4.5746E+00	2.9719E-02	0	5
1.0001E-02	5.4541E+02	1.A111E-03	8.0707E-05	1.6441E-05	9.8582E-01	6.9018E+00	2.9379E-02	0	A
1.2000E-02	6.545AE+02	1.A031E-03	1.0650E-04	1.4693E-05	9.8152E-01	8.9865E+00	1.0107E-02	0	7
1.4000E-02	7.726AE+02	1.7860E-03	1.6062E-04	1.2729E-05	9.7223E-01	1.2939E+01	1.A544E-02	0	8
2.1000E-02	1.1454E+03	1.7632E-03	2.7032E-04	9.7699E-06	9.5080E-01	2.1777E+01	1.9704E-02	0	9
2.5000E-02	1.3635E+03	1.744AE-03	3.3033E-04	9.3119E-06	9.4981E-01	2.A612E+01	1.910AE-02	0	10
3.0000E-02	1.6362E+03	1.7221E-03	3.9852E-04	9.962AE-06	9.3745E-01	2.AA03E+01	1.9994E-02	0	11
4.0000E-02	2.1817E+03	1.6A83E-03	4.0338E-04	1.1854E-05	9.0813E-01	3.2497E+01	1.9415E-02	0	12
5.0000E-02	2.7271E+03	1.6054E-03	4.4214E-04	1.3834E-05	8.7390E-01	3.9619E+01	1.7980E-02	0	13
7.0000E-02	3.8179E+03	1.4724E-03	4.5676E-04	1.9064E-05	8.0149E-01	3.4797E+01	2.4793E-02	0	14
9.0000E-02	4.9087E+03	1.325AE-03	4.6748E-04	2.3687E-05	7.2145E-01	3.7660E+01	3.0698E-02	0	15
1.1000E-01	5.999AE+03	1.1574E-03	4.3914E-04	2.9329E-05	6.3003E-01	3.5378E+01	3.A137E-02	0	16
1.3000E-01	7.0904E+03	9.570AE-04	3.9036E-04	3.552AE-05	5.2099E-01	3.1448E+01	4.4191E-02	0	17
1.5000E-01	8.1812E+03	7.3472E-04	3.3863E-04	3.9569E-05	3.9999E-01	2.7280E+01	5.1453E-02	0	18
1.7000E-01	9.2720E+03	5.4632E-04	2.9445E-04	4.005AE-05	2.9740E-01	2.3721E+01	5.9080E-02	0	19
1.9000E-01	1.0363E+04	3.8449E-04	2.7029E-04	3.4849E-05	2.0930E-01	2.1775E+01	4.930AE-02	0	20
2.1500E-01	1.172AE+04	2.331AE-04	2.5435E-04	2.501AE-05	1.2692E-01	2.0491E+01	3.9523E-02	0	21
2.4000E-01	1.309AE+04	1.299AE-04	2.9515E-04	1.2839E-05	7.0744E-02	2.3777E+01	1.A687E-02	0	22
2.6500E-01	1.4453E+04	A.163AE-05	4.1916E-04	4.4584E-06	3.3553E-02	3.3768E+01	5.7873E-03	0	23
2.9000E-01	1.5817E+04	1.442AE-05	3.3093E-04	1.352AE-06	7.8542E-03	2.A660E+01	1.7589E-03	0	24
3.1500E-01	1.7181E+04	0	0	-4.7871E-14	0	0	-6.9251E-11	0	25

A= .4979B547E-02 B=-.17594337E+00 GAMMA CA= 0

Y/DELTA	ET/(UT*DELTA)	EM/NU-0	ET/MU-MOM	E-T/MU	
0	0	7.0129E-03	0	0	1
2.1690E-02	5.926AE-03	1.8669E-04	6.2478E-02	3.2561E+00	2
2.602BE-02	6.4037E-03	4.9540E-04	8.3207E-02	3.518AE+00	3
3.036AE-02	6.1881E-03	2.5574E-03	1.1709E-03	3.4007E+00	4
3.4704E-02	8.3255E-03	2.887AE-02	1.1349E-03	4.574AE+00	5
4.3379E-02	1.1833E-02	4.2814E-02	1.2427E-03	6.501AE+00	6
5.2055E-02	1.5627E-02	6.1621E-02	1.3491E-03	8.9865E+00	7
6.9407E-02	2.3549E-02	5.1619E-02	1.5765E-03	1.2939E+01	8
9.1097E-02	3.9633E-02	3.9525E-02	1.9931E-03	2.1777E+01	9
1.0845E-01	4.8432E-02	1.960AE-03	1.8283E-03	2.6619E+01	10
1.3014E-01	5.2565E-02	9.0571E-03	2.3942E-03	2.888AE+01	11
1.7352E-01	5.9142E-02	1.1461E-04	3.6647E-03	3.2497E+01	12
2.1690E-01	6.482AE-02	2.3145E-04	5.0273E-03	3.5619E+01	13
3.036AE-01	6.696A E-02	4.892AE-04	A.7477E-03	3.6797E+01	14
3.9041E-01	6.854AE-02	5.5119E-04	1.2718E-04	3.766AE+01	15
4.7717E-01	6.438AE-02	1.0414E-05	1.7662E-04	3.537AE+01	16
5.6393E-01	5.7233E-02	A.1925E-04	2.2048E-04	3.144AE+01	17
6.5069E-01	4.964AE-02	2.4731E-04	2.7A37E-04	2.728AE+01	18
7.3745E-01	4.317AE-02	1.0525E-04	2.9697E-04	2.3721E+01	19
8.2421E-01	3.9629E-02	3.A109E-04	2.8440E-04	2.177AE+01	20
9.3266E-01	3.7292E-02	1.140AE-03	2.3467E-04	2.0491E+01	21
1.0411E+00	4.3274E-02	1.9991E-02	1.4046E-04	2.3777E+01	22
1.149AE+00	6.1455E-02	2.A22AE-01	5.7192E-03	3.376AE+01	23
1.258AE+00	4.852AE-02	5.1912E+01	2.0307E-03	2.666AE+01	24
1.366AE+00	0	-2.1714E-2	-A.4279E-05	0	25

RUN NO. A= 3 M= OLBM/SQFT-HR X=14.00INCHES REYNOLDS NUMBER = 8.4839E+05

FREE STREAM PROPERTIES PS=4.1450 PT=3.6220 T=112.12 UINF= 121.771 FT/SEC RHO= .0665249 LBM/CUBICFT

THETA= .37746E-01 DELTA*= .54121E-01 DELTA= .28392E+00 UTAU= 0

Y INCHES	U/UINF	R	T/TINF	MU*DU/DY	DU/DY	ALPHA	BETA	Y/DELTA	
0	0	0	1.0000E+00	1.1978E+00	9.6457E+04	0	0	0	1
6.5000E-03	4.0768E-01	3.8061E+02	1.0000E+00	6.9378E-01	5.2665E+04	1.5069E-03	5.4154E-04	2.2893E-02	2
7.5000E-03	4.4399E-01	4.3916E+02	1.0000E+00	5.7018E-01	4.5927E+04	1.0355E-03	7.2412E-04	2.6415E-02	3
8.5000E-03	4.6938E-01	4.9772E+02	1.0000E+00	4.6544E-01	3.7497E+04	2.3962E-03	9.3500E-04	2.9938E-02	4
9.5000E-03	4.9626E-01	5.5627E+02	1.0000E+00	3.6408E-01	2.9391E+04	2.8838E-03	1.1712E-03	3.3460E-02	5
1.1500E-02	5.3093E-01	6.7338E+02	1.0000E+00	2.3885E-01	1.9248E+04	3.0183E-03	1.7021E-03	4.0504E-02	6
1.3500E-02	5.5334E-01	7.9049E+02	1.0000E+00	1.6307E-01	1.3137E+04	5.0117E-03	2.2035E-03	4.7548E-02	7
1.7500E-02	5.8487E-01	1.0247E+03	1.0000E+00	1.2297E-01	9.9068E+03	7.9200E-03	3.4865E-03	6.1636E-02	8
2.2500E-02	6.1232E-01	1.3175E+03	1.0000E+00	8.9604E-02	7.2427E+03	1.0376E-02	5.4389E-03	7.9246E-02	9
2.6500E-02	6.3258E-01	1.5517E+03	1.0000E+00	7.1314E-02	5.7451E+03	1.2923E-02	7.0232E-03	9.3335E-02	10
3.1500E-02	6.4866E-01	1.8445E+03	1.0000E+00	5.7538E-02	4.6347E+03	1.4214E-02	9.1299E-03	1.1095E-01	11
4.1500E-02	6.7943E-01	2.4300E+03	1.0000E+00	4.9960E-02	4.0248E+03	2.3099E-02	1.2709E-02	1.4617E-01	12
5.1500E-02	7.0476E-01	3.0156E+03	1.0000E+00	4.1407E-02	3.3350E+03	3.0338E-02	1.8716E-02	1.8139E-01	13
7.1500E-02	7.4772E-01	4.1867E+03	1.0000E+00	3.5444E-02	2.8554E+03	4.6747E-02	2.8900E-02	2.5183E-01	14
9.1500E-02	7.8219E-01	5.3578E+03	1.0000E+00	3.0700E-02	2.4740E+03	6.9302E-02	4.2585E-02	3.2227E-01	15
1.1150E-01	8.1638E-01	6.5289E+03	1.0000E+00	2.6508E-02	2.3029E+03	7.0011E-02	5.4604E-02	3.9271E-01	16
1.3150E-01	8.4464E-01	7.7000E+03	1.0000E+00	2.5704E-02	2.0707E+03	9.8545E-02	7.2148E-02	4.6315E-01	17
1.5150E-01	8.7341E-01	8.8711E+03	1.0000E+00	2.4397E-02	1.9655E+03	1.1816E-01	8.8010E-02	5.3359E-01	18
1.7150E-01	8.9819E-01	1.0042E+04	1.0000E+00	2.1799E-02	1.7558E+03	1.3875E-01	1.0725E-01	6.0403E-01	19
1.9150E-01	9.2170E-01	1.1213E+04	1.0000E+00	2.0139E-02	1.6221E+03	1.6026E-01	1.2603E-01	6.7446E-01	20
2.1650E-01	9.4667E-01	1.2677E+04	1.0000E+00	1.7081E-02	1.3760E+03	1.8840E-01	1.4315E-01	7.6253E-01	21
2.4150E-01	9.6873E-01	1.4141E+04	1.0000E+00	1.3409E-02	1.0799E+03	2.1785E-01	1.8130E-01	8.5059E-01	22
2.6650E-01	9.8400E-01	1.5605E+04	1.0000E+00	8.5590E-03	6.8958E+02	2.4847E-01	2.1130E-01	9.3863E-01	23
2.9150E-01	9.9280E-01	1.7069E+04	1.0000E+00	4.7681E-03	3.8412E+02	2.8087E-01	2.4253E-01	1.0267E+00	24
3.1650E-01	9.9724E-01	1.8533E+04	1.0000E+00	2.4684E-03	1.9887E+02	3.1251E-01	2.7481E-01	1.1147E+00	25
3.4150E-01	9.9972E-01	1.9997E+04	1.0000E+00	1.0519E-03	8.4713E+01	3.4569E-01	3.0794E-01	1.202AE+00	26
3.6650E-01	1.0004E+00	2.1460E+04	1.0000E+00	1.1018E-04	8.8765E+00	3.7954E-01	3.4179E-01	1.2908E+00	27
3.9150E-01	1.0000E+00	2.2924E+04	1.0000E+00	-1.4591E-04	-1.1755E+01	4.1401E-01	3.7627E-01	1.3789E+00	28

A= .49750547E-02 B= .73514510E+00 CF/2= .17495067E-02 THETA CAL= .375[illegible] X=14.00

Y/DELTA+	[illegible]	Y+	Y++	UTAU+	U+	U++	1-U	(1-U)+	
0	0	0	0	5.1225E+00	0	0	2.3772E+01	2.3772E+01	1
1.2010E-01	[illegible]	1.4870E-01	[illegible]	5.1225E+00	9.6914E+00	[illegible]	1.4000E+01	1.4000E+01	2
1.3858E-01	[illegible]	1.7159E-01	[illegible]	5.1225E+00	1.0555E+01	[illegible]	1.3217E+01	1.3217E+01	3
1.5705E-01	[illegible]	1.9446E-01	[illegible]	5.1225E+00	1.1158E+01	[illegible]	1.2614E+01	1.2614E+01	4
1.7553E-01	[illegible]	2.1733E-01	[illegible]	5.1225E+00	1.1797E+01	[illegible]	1.1975E+01	1.1975E+01	5
2.1249E-01	[illegible]	2.6309E-01	[illegible]	5.1225E+00	1.2621E+01	[illegible]	1.1151E+01	1.1151E+01	6
2.4944E-01	[illegible]	3.0884E-01	[illegible]	5.1225E+00	1.3154E+01	[illegible]	1.0618E+01	1.0618E+01	7
3.2335E-01	[illegible]	4.0030E-01	[illegible]	5.1225E+00	1.3904E+01	[illegible]	9.8684E+00	9.8684E+00	8
4.1573E-01	[illegible]	5.1474E-01	[illegible]	5.1225E+00	1.4556E+01	[illegible]	9.2160E+00	9.2160E+00	9
4.8964E-01	[illegible]	6.0625E-01	[illegible]	5.1225E+00	1.5036E+01	[illegible]	8.7362E+00	8.7362E+00	10
5.8202E-01	[illegible]	7.2064E-01	[illegible]	5.1225E+00	1.5420E+01	[illegible]	8.3520E+00	8.3520E+00	11
7.6676E-01	[illegible]	9.4941E-01	[illegible]	5.1225E+00	1.6151E+01	[illegible]	7.6206E+00	7.6206E+00	12
9.5150E-01	[illegible]	1.1782E+02	[illegible]	5.1225E+00	1.6753E+01	[illegible]	7.0184E+00	7.0184E+00	13
1.3211E+00	[illegible]	1.6357E+02	[illegible]	5.1225E+00	1.7775E+01	[illegible]	5.9972E+00	5.9972E+00	14
1.6906E+00	[illegible]	2.0933E+02	[illegible]	5.1225E+00	1.8594E+01	[illegible]	5.1778E+00	5.1778E+00	15
2.0602E+00	[illegible]	2.5508E+02	[illegible]	5.1225E+00	1.9407E+01	[illegible]	4.3649E+00	4.3649E+00	16
2.4297E+00	[illegible]	3.0084E+02	[illegible]	5.1225E+00	2.0079E+01	[illegible]	3.6932E+00	3.6932E+00	17
2.7993E+00	[illegible]	3.4659E+02	[illegible]	5.1225E+00	2.0763E+01	[illegible]	3.0094E+00	3.0094E+00	18
3.1688E+00	[illegible]	3.9235E+02	[illegible]	5.1225E+00	2.1352E+01	[illegible]	2.4203E+00	2.4203E+00	19
3.5383E+00	[illegible]	4.3810E+02	[illegible]	5.1225E+00	2.1911E+01	[illegible]	1.8613E+00	1.8613E+00	20
4.0003E+00	[illegible]	4.9529E+02	[illegible]	5.1225E+00	2.2504E+01	[illegible]	1.2677E+00	1.2677E+00	21
4.4622E+00	[illegible]	5.5249E+02	[illegible]	5.1225E+00	2.3029E+01	[illegible]	7.4342E-01	7.4342E-01	22
4.9241E+00	[illegible]	6.0968E+02	[illegible]	5.1225E+00	2.3391E+01	[illegible]	3.8043E-01	3.8043E-01	23
5.3860E+00	[illegible]	6.6687E+02	[illegible]	5.1225E+00	2.3601E+01	[illegible]	1.7126E-01	1.7126E-01	24
5.8480E+00	[illegible]	7.2407E+02	[illegible]	5.1225E+00	2.3706E+01	[illegible]	6.5723E-02	6.5723E-02	25
6.3099E+00	[illegible]	7.8126E+02	[illegible]	5.1225E+00	2.3765E+01	[illegible]	6.9641E-03	6.9641E-03	26
6.7718E+00	[illegible]	8.3845E+02	[illegible]	5.1225E+00	2.3782E+01	[illegible]	-9.8428E-03	-9.8428E-03	27
7.2337E+00	[illegible]	8.9565E+02	[illegible]	5.1225E+00	2.3772E+01	[illegible]	0	0	28

Y	[illegible]	U+Y+	[illegible]	EM/NU-S	EM/NU-O	ET/NU-[illegible]	
0	[illegible]	0	[illegible]	0	2.6142E+03	[illegible]	1
6.5000E-03	[illegible]	1.4411E+02	[illegible]	1.4039E+00	1.0548E+03	[illegible]	2
7.5000E-03	[illegible]	1.8109E+02	[illegible]	1.9014E+00	8.4894E+02	[illegible]	3
8.5000E-03	[illegible]	2.1698E+02	[illegible]	2.3829E+00	4.3875E+02	[illegible]	4
9.5000E-03	[illegible]	2.5639E+02	[illegible]	2.9014E+00	3.1119E+02	[illegible]	5
1.1500E-02	[illegible]	3.3205E+02	[illegible]	3.8688E+00	2.3870E+02	[illegible]	6
1.3500E-02	[illegible]	4.0625E+02	[illegible]	4.7886E+00	3.9485E+02	[illegible]	7
1.7500E-02	[illegible]	5.5663E+02	[illegible]	6.6049E+00	1.1617E+03	[illegible]	8
2.2500E-02	[illegible]	7.4925E+02	[illegible]	8.9007E+00	1.0711E+03	[illegible]	9
2.6500E-02	[illegible]	9.1154E+02	[illegible]	1.0830E+01	1.1506E+03	[illegible]	10
3.1500E-02	[illegible]	1.1117E+03	[illegible]	1.3209E+01	3.2507E+03	[illegible]	11
4.1500E-02	[illegible]	1.5334E+03	[illegible]	1.8219E+01	9.8745E+03	[illegible]	12
5.1500E-02	[illegible]	1.9739E+03	[illegible]	2.3459E+01	1.0394E+04	[illegible]	13
7.1500E-02	[illegible]	2.9075E+03	[illegible]	3.4544E+01	2.8800E+04	[illegible]	14
9.1500E-02	[illegible]	3.8923E+03	[illegible]	4.6244E+01	4.8338E+04	[illegible]	15
1.1150E-01	[illegible]	4.9504E+03	[illegible]	5.8816E+01	7.3984E+04	[illegible]	16
1.3150E-01	[illegible]	6.0404E+03	[illegible]	7.1766E+01	6.1127E+04	[illegible]	17
1.5150E-01	[illegible]	7.1961E+03	[illegible]	8.5497E+01	7.7113E+04	[illegible]	18
1.7150E-01	[illegible]	8.3772E+03	[illegible]	9.9530E+01	3.8216E+04	[illegible]	19
1.9150E-01	[illegible]	9.5990E+03	[illegible]	1.1408E+02	3.6239E+04	[illegible]	20
2.1650E-01	[illegible]	1.1146E+04	[illegible]	1.3249E+02	1.2197E+04	[illegible]	21
2.4150E-01	[illegible]	1.2723E+04	[illegible]	1.5114E+02	3.9416E+03	[illegible]	22
2.6650E-01	[illegible]	1.4261E+04	[illegible]	1.6944E+02	9.5693E+02	[illegible]	23
2.9150E-01	[illegible]	1.5739E+04	[illegible]	1.8690E+02	3.2270E+02	[illegible]	24
3.1650E-01	[illegible]	1.7165E+04	[illegible]	2.0394E+02	1.2007E+02	[illegible]	25
3.4150E-01	[illegible]	1.8567E+04	[illegible]	2.2050E+02	2.3979E+01	[illegible]	26
3.6650E-01	[illegible]	1.9940E+04	[illegible]	2.3691E+02	1.0031E-01	[illegible]	27
3.9150E-01	[illegible]	2.1291E+04	[illegible]	2.5296E+02	-1.2861E+01	[illegible]	28

THE MAX SHEAR AT POINT 1 IS CF/CFW = 1.00000E+00

	Y/DELTA	(UMAX-U)/UTMAX	EPST/UTMAX*DELTA	Y*MAX	U*MAX	CF/2
1	0	2.4596E+01	0	0	0	1.6538E-03
2	2.2893E-02	1.4988E+01	3.7944E-03	1.4372E+01	1.0027E+01	1.6312E-03
3	2.6419E-02	1.3675E+01	4.3390E-03	1.6983E+01	1.0920E+01	1.6267E-03
4	2.9078E-02	1.2891E+01	5.2992E-03	1.8795E+01	1.1545E+01	1.6220E-03
5	3.1409E-02	1.2305E+01	6.7403E-03	2.1006E+01	1.2204E+01	1.6171E-03
6	4.3514E-02	1.1537E+01	1.0243E-02	2.5428E+01	1.3090E+01	1.6088E-03
7	4.7548E-02	1.1088E+01	1.4024E-02	2.9858E+01	1.3610E+01	1.6003E-03
8	6.1683E-02	1.0210E+01	1.9604E-02	3.8695E 01	1.4385E+01	1.5853E-03
9	7.9248E-02	9.5339E+00	2.6503E-02	4.9750E+01	1.5068E+01	1.5669E-03
10	9.3335E-02	9.0389E+00	3.3116E-02	5.8695E+01	1.5557E+01	1.5538E-03
11	1.1095E-01	8.4414E+00	4.0573E-02	6.9650E+01	1.5954E+01	1.5398E-03
12	1.4617E-01	7.7846E+00	4.5625E-02	9.1761E+01	1.6711E+01	1.4989E-03
13	1.8139E-01	7.2616E+00	5.3629E-02	1.1387E+02	1.7334E+01	1.4663E-03
14	2.5183E-01	6.2898E+00	5.9039E-02	1.5810E+02	1.8391E+01	1.3741E-03
15	3.2227E-01	5.3572E+00	6.3329E-02	2.0232E+02	1.9238E+01	1.2788E-03
16	3.9271E-01	4.5162E+00	6.2259E-02	2.4654E+02	2.0070E+01	1.1704E-03
17	4.6315E-01	3.8212E+00	6.1934E-02	2.9076E+02	2.0774E+01	1.0469E-03
18	5.3359E-01	3.1137E+00	5.6911E-02	3.3498E+02	2.1482E+01	9.1388E-04
19	6.0403E-01	2.5042E+00	5.3601E-02	3.7921E+02	2.2091E+01	7.8895E-04
20	6.7448E-01	1.9259E+00	4.6259E-02	4.2343E+02	2.2670E+01	6.5247E-04
21	7.4493E-01	1.5118E+00	3.9189E-02	4.6765E+02	2.3204E+01	4.4814E-04
22	8.1537E-01	1.0918E+00	3.3412E-02	5.1399E+02	2.3824E+01	2.9459E-04
23	9.3583E-01	1.0361E-01	3.1461E-02	5.8026E+02	2.4202E+01	1.7710E-04
24	1.0297E+00	1.7719E-01	3.0529E-02	6.4454E+02	2.4418E+01	9.5712E-05
25	1.1197E+00	8.8800E-02	2.1404E-02	6.9942E+02	2.4528E+01	3.4747E-05
26	1.2044E+00	4.7914E-11	1.6410E-02	7.5410E+02	2.4580E+01	1.1347E-05
27	1.2998E+00	-1.1184E-02	5.8463E-03	8.1878E+02	2.4604E+01	4.2361E-06
28	1.3789E+00	H	-8.5146E-10	8.6545E+02	2.4594E+01	8.1781E-14

(CFMAX - CFWALL)/2 = 0

(CFMAX - CFWALL)/CFMAX = 0

(CFMAX - CFWALL)/CFWALL = 0

MASS= x=14.0 INCHES F= 0 ZETA= 0

Y INCHES	Re	CF/2	EPSILON T	EPSILON D	CF/CFM	E-T/MU	E-D/D12	SC=	
0	0	1.4530E-03	0	0	1.0000E+00	0	0	0	1
6.500E-03	3.5452E+02	1.4712E-03	3.0662E-05	4.2694E-05	9.8679E-01	2.4702E+00	5.9000E-02	0	2
7.500E-03	4.0904E+02	1.4478E-03	3.5663E-05	4.4624E-05	9.8404E-01	2.8247E+00	5.8414E-02	0	3
8.500E-03	4.6356E+02	1.4220E-03	4.2022E-05	4.2324E-05	9.8121E-01	3.4490E+00	5.4844E-02	0	4
9.500E-03	5.1814E+02	1.4171E-03	5.4467E-05	3.7634E-05	9.7824E-01	4.3479E+00	4.8327E-02	0	5
1.150E-02	6.2729E+02	1.4084E-03	8.2773E-05	2.9187E-05	9.7321E-01	6.4403E+00	3.7954E-02	0	6
1.350E-02	7.3631E+02	1.4001E-03	1.2860E-04	2.2514E-05	9.6811E-01	9.7153E+00	2.9277E-02	0	7
1.750E-02	9.5447E+02	1.3851E-03	1.9841E-04	1.9529E-05	9.5902E-01	1.9762E+01	2.4914E-02	0	8
2.250E-02	1.2272E+03	1.3669E-03	2.1416E-04	1.6524E-05	9.4787E-01	1.7253E+01	2.2811E-02	0	9
2.650E-02	1.4453E+03	1.3530E-03	2.4761E-04	1.4704E-05	9.3950E-01	2.1558E+01	1.8241E-02	0	10
3.150E-02	1.7184E+03	1.3350E-03	3.2787E-04	1.3179E-05	9.2859E-01	2.8413E+01	1.7134E-02	0	11
4.150E-02	2.2434E+03	1.3089E-03	3.8869E-04	1.3634E-05	9.0674E-01	2.9702E+01	1.7731E-02	0	12
5.150E-02	2.7684E+03	1.2901E-03	4.3337E-04	1.3274E-05	8.8340E-01	3.4913E+01	1.7265E-02	0	13
7.150E-02	3.8997E+03	1.2741E-03	4.7709E-04	1.5081E-05	8.3244E-01	3.8435E+01	1.8624E-02	0	14
9.150E-02	4.9998E+03	1.2703E-03	5.1175E-04	1.6519E-05	7.7367E-01	4.1227E+01	2.2001E-02	0	15
1.115E-01	6.0814E+03	1.2704E-03	5.8311E-04	1.9511E-05	7.2802E-01	4.8531E+01	2.4892E-02	0	16
1.315E-01	7.1722E+03	1.2469E-03	5.8048E-04	2.2177E-05	6.7336E-01	4.8719E+01	2.8830E-02	0	17
1.515E-01	8.2630E+03	1.2309E-03	6.0089E-04	2.5591E-05	6.1823E-01	5.2749E+01	3.2270E-02	0	18
1.715E-01	9.3539E+03	1.2125E-03	6.3314E-04	2.7284E-05	5.6475E-01	5.4894E+01	3.4457E-02	0	19
1.915E-01	1.0444E+04	1.1947E-03	6.7378E-04	2.9639E-05	5.1051E-01	5.8112E+01	3.8534E-02	0	20
2.165E-01	1.1808E+04	1.1814E-03	7.1665E-04	2.9408E-05	4.4624E-01	5.9809E+01	4.0242E-02	0	21
2.415E-01	1.3172E+04	1.1695E-03	7.7000E-04	2.8049E-05	3.8014E-01	6.0751E+01	4.1869E-02	0	22
2.665E-01	1.4535E+04	1.1710E-03	7.9423E-04	1.8159E-05	3.1713E-01	6.0481E+01	3.9612E-02	0	23
2.915E-01	1.5898E+04	1.1717E-03	8.4467E-04	1.8697E-05	2.5700E-01	6.0826E+01	4.1910E-02	0	24
3.165E-01	1.7262E+04	1.1747E-03	1.7297E-04	5.7584E-04	2.1020E-02	1.2934E+01	7.4884E-03	0	25
3.415E-01	1.8624E+04	1.1347E-03	1.3260E-04	2.4899E-04	8.8645E-03	1.0403E+01	3.9369E-03	0	26
3.665E-01	1.9987E+04	4.2361E-04	4.7243E-04	2.6187E-07	2.5624E-03	3.8080E+01	1.4053E-04	0	27
3.915E-01	2.1353E+04	8.1701E-14	-6.8805E-12	-3.4734E-07	4.9424E-11	-5.4430E-07	-4.9167E-04	0	28

AR .4070E347E-02 Re=.1675912/3E+00 GAMMA Cal= 0

Y/DELTA	ET/(UT*DELTA)	EM/NU-0	ET/MU-MOM	E-T/MU	
0	0	2.6142E-03	0	0	1
2.200E-02	3.7944E-03	1.0540E-03	1.2448E-03	2.4702E+00	2
2.641E-02	4.3390E-03	8.4004E-04	1.4453E-03	2.8247E+00	3
2.993E-02	5.2992E-03	4.7872E-02	1.5156E-03	3.4490E+00	4
3.346E-02	6.7403E-03	3.1118E-02	1.4839E-03	4.3870E+00	5
4.050E-02	1.0243 -02	2.3873E-02	1.4235E-03	6.6808E+00	6
4.754E-02	1.4924E-02	3.0485E-02	1.3394E-03	9.7194E+00	7
6.163E-02	1.9604E-02	1.1617E-02	1.4073E-03	1.2769E+01	8
7.924E-02	2.6503E-02	1.0711E-01	2.0513E-03	1.7259E+01	9
9.333E-02	3.3114E-02	1.1504E-01	2.2471E-03	2.1558E+01	10
1.109E-01	4.0573E-02	3.2507E-01	2.5728E-03	2.6419E+01	11
1.461E-01	4.5629E-02	9.8749E-01	3.8779E-03	2.9709E+01	12
1.813E-01	5.3620E-02	1.0394E-04	4.9494E-03	3.4619E+01	13
2.518E-01	5.9030E-02	2.8800E-04	8.1666E-03	3.8434E+01	14
3.222E-01	6.3320E-02	4.0334E-04	1.1588E-02	4.1227E+01	15
3.927E-01	6.2254E-02	7.3984E-04	1.6017E-02	4.0534E+01	16
4.631E-01	6.1934E-02	8.1127E-04	2.0033E-02	4.0310E+01	17
5.339E-01	5.6911E-02	7.7113E-04	2.5234E-02	3.7040E+01	18
6.040E-01	5.3601E-02	3.8214E-04	2.8892E-02	3.4894E+01	19
6.744E-01	4.6255E-02	3.4239E-04	3.3283E-02	3.0119E+01	20
7.625E-01	3.9185E-02	1.2197E-04	3.6883E-02	2.5500E+01	21
8.505E-01	3.3419E-02	3.9414E-05	3.9237E-02	2.1754E+01	22
9.386E-01	3.1461E-02	9.5491E-03	3.7999E-02	2.0481E+01	23
1.026E+00	3.0524E-02	3.2477E-03	3.8260E-02	1.9872E+01	24
1.114E+00	2.1404E-02	1.2007E-03	3.1145E-02	1.3934E+01	25
1.202E+00	1.4418E-02	2.3973E-03	5.5271E-03	1.0684E+01	26
1.290E+00	5.8463E-03	1.0031E-03	4.4704E-03	3.8064E+01	27
1.376E+00	-4.5144E-10	-1.2861E-03	-1.1980E-03	-5.5434E-07	28

RUN NO. A= 4 M= 0LBM/SQFT-HR X=18.00INCHES REYNOLDS NUMBER = 1.8719E+06

FREE STREAM PROPERTIES PS=4.1320 PT=3.6600 T=112.12 UINF= 122.363 FT/SEC RHO= .0665735 LBM/CUBICFT

THETA= .44089E-01 DELTA*= .63125E-01 DELTA= .32790E+00 UTAU= 0

Y INCHES	U/UINF	R	T/TINF	MU*DU/DY	DU/DY	ALPHA	BETA	Y/DELTA	
0	0	0	1.0000E+00	1.4444E-01	1.1637E+04	0	0	0	1
7.0000E-03	3.7910E-01	4.1188E+02	1.0000E+00	3.9495E-01	3.1817E+04	1.5051E-03	5.8061E-04	2.1394E-02	2
8.0000E-03	3.8800E-01	4.7072E+02	1.0000E+00	4.3077E-01	3.4700E+04	1.8928E-03	6.4961E-04	2.4450E-02	3
9.0000E-03	4.2368E-01	5.2956E+02	1.0000E+00	6.1058E-01	4.9189E+04	2.3056E-03	8.1870E-04	2.7506E-02	4
1.0000E-02	4.5268E-01	5.8840E+02	1.0000E+00	5.0424E-01	4.0622E+04	2.7491E-03	1.0143E-03	3.0563E-02	5
1.2000E-02	5.0598E-01	7.0608E+02	1.0000E+00	3.4410E-01	2.7721E+04	3.7176E-03	1.4808E-03	3.6675E-02	6
1.4000E-02	5.3613E-01	8.2376E+02	1.0000E+00	2.1457E-01	1.7286E+04	4.7649E-03	2.0246E-03	4.2788E-02	7
1.8000E-02	5.7522E-01	1.0591E+03	1.0000E+00	1.3994E-01	1.1274E+04	7.0198E-03	3.0784E-03	5.5013E-02	8
2.3000E-02	6.0440E-01	1.3533E+03	1.0000E+00	8.7678E-02	7.0634E+03	1.0027E-02	5.0529E-03	7.0294E-02	9
2.7000E-02	6.2112E-01	1.5887E+03	1.0000E+00	6.6520E-02	5.3596E+03	1.2535E-02	6.9872E-03	8.2519E-02	10
3.2000E-02	6.3740E-01	1.8829E+03	1.0000E+00	5.5339E-02	4.4582E+03	1.5773E-02	8.6248E-03	9.7881E-02	11
4.2000E-02	6.6673E-01	2.4713E+03	1.0000E+00	4.6279E-02	3.7760E+03	2.2532E-02	1.2033E-02	1.2836E-01	12
5.2000E-02	6.8990E-01	3.0597E+03	1.0000E+00	4.0081E-02	3.2290E+03	2.9629E-02	1.7847E-02	1.5893E-01	13
7.2000E-02	7.3067E-01	4.2365E+03	1.0000E+00	3.3644E-02	2.7106E+03	4.4725E-02	2.8586E-02	2.2005E-01	14
9.2000E-02	7.6448E-01	5.4133E+03	1.0000E+00	2.8242E-02	2.2752E+03	6.0901E-02	4.0681E-02	2.8110E-01	15
1.1200E-01	7.9290E-01	6.5901E+03	1.0000E+00	2.5434E-02	2.0490E+03	7.8059E-02	5.4841E-02	3.4230E-01	16
1.3200E-01	8.2000E-01	7.7669E+03	1.0000E+00	2.4533E-02	1.9764E+03	9.4182E-02	6.8649E-02	4.0343E-01	17
1.5200E-01	8.4656E-01	8.9437E+03	1.0000E+00	2.2871E-02	1.8425E+03	1.1521E-01	8.4529E-02	4.6455E-01	18
1.7200E-01	8.7074E-01	1.0121E+04	1.0000E+00	2.0809E-02	1.6759E+03	1.3516E-01	1.0164E-01	5.2568E-01	19
1.9200E-01	8.9183E-01	1.1297E+04	1.0000E+00	1.8921E-02	1.5243E+03	1.5600E-01	1.2004E-01	5.8680E-01	20
2.1700E-01	9.1750E-01	1.2776E+04	1.0000E+00	1.7574E-02	1.4159E+03	1.8325E-01	1.4469E-01	6.6321E-01	21
2.4200E-01	9.3928E-01	1.4239E+04	1.0000E+00	1.5560E-02	1.2542E+03	2.1180E-01	1.7123E-01	7.3962E-01	22
2.6700E-01	9.6028E-01	1.5710E+04	1.0000E+00	1.3061E-02	1.0522E+03	2.4161E-01	1.9957E-01	8.1603E-01	23
2.9200E-01	9.7552E-01	1.7181E+04	1.0000E+00	9.5044E-03	7.7214E+02	2.7257E-01	2.2954E-01	8.9243E-01	24
3.1700E-01	9.8624E-01	1.8652E+04	1.0000E+00	6.8600E-03	5.5264E+02	3.0458E-01	2.6099E-01	9.6884E-01	25
3.4200E-01	9.9466E-01	2.0123E+04	1.0000E+00	4.3910E-03	3.5374E+02	3.3751E-01	2.9357E-01	1.0452E+00	26
3.6700E-01	9.9850E-01	2.1594E+04	1.0000E+00	1.8448E-03	1.4862E+02	3.7125E-01	3.2720E-01	1.1217E+00	27
3.9200E-01	1.0000E+00	2.3065E+04	1.0000E+00	5.3259E-04	4.2902E+01	4.0571E-01	3.6163E-01	1.1981E+00	28
4.1700E-01	1.0000E+00	2.4534E+04	1.0000E+00	-6.6300E-11	-5.3419E-06	4.4092E-01	3.9674E-01	1.2745E+00	29

A= .6975U547E-02 R= .7351451 E-01 CF/2= .16A58512E-02 THETA CAL= .44401891E-01 X=1A.00

Y/DELTA=	Y/DELTA	V=	V+=	UTAL=	U=	U+=	1-U	(1-U)=	
0	0	0	0	4.9549E+00	0	0	2.4501E+01	2.4501E+01	1
1.1[illegible]E-01	2.1394E-02	1.5025E-01	1.5A25E+01	4.9549E+00	9.2883E-00	9.2883E+00	1.5213E+01	1.5213E+01	2
2.2[illegible]E-01	2.4450E-02	1.7557E-01	1.7857E+01	4.9549E+00	9.5064E+00	9.5064E+00	1.4994E+01	1.4994E+01	3
3.3[illegible]E-01	2.7504E-02	2.0089E-01	2.0A89E+01	4.9549E+00	1.0361E+01	1.0361E+01	1.4120E+01	1.4120E+01	4
4.4[illegible]E-01	3.0563E-02	2.2621E-01	2.2321E+01	4.9549E+00	1.1091E+01	1.1091E+01	1.3410E+01	1.3410E+01	5
5.5[illegible]E-01	3.3627E-02	2.5178E-01	2.5785E+01	4.9549E+00	1.2397E+01	1.2397E+01	1.2104E+01	1.2104E+01	6
6.6[illegible]E-01	3.6698E-02	2.7720E-01	2.7249E+01	4.9549E+00	1.3134E+01	1.3136E+01	1.1365E+01	1.1365E+01	7
7.7[illegible]E-01	3.9775E-02	3.0277E-01	3.0017E+01	4.9549E+00	1.4093E+01	1.4093E+01	1.0400E+01	1.0400E+01	8
8.8[illegible]E-01	4.2860E-02	3.2833E-01	3.2538E+01	4.9549E+00	1.4808E+01	1.4808E+01	9.6925E+00	9.6925E+00	9
9.9[illegible]E-01	4.5951E-02	3.5390E-01	3.5067E+01	4.9549E+00	1.5218E+01	1.5218E+01	9.2820E+00	9.2820E+00	10
1.1[illegible]E+00	4.9049E-02	3.7950E-01	3.7627E+01	4.9549E+00	1.5617E+01	1.5617E+01	8.8830E+00	8.8830E+00	11
1.2[illegible]E+00	5.2154E-02	4.0514E-01	4.0188E+01	4.9549E+00	1.6336E+01	1.6336E+01	8.1653E+00	8.1653E+00	12
1.3[illegible]E+00	5.5267E-02	4.3082E-01	4.2748E+01	4.9549E+00	1.6903E+01	1.6903E+01	7.5978E+00	7.5978E+00	13
1.4[illegible]E+00	5.8388E-02	4.5655E-01	4.5309E+01	4.9549E+00	1.7902E+01	1.7902E+01	6.5988E+00	6.5988E+00	14
1.5[illegible]E+00	6.1518E-02	4.8234E-01	4.7870E+01	4.9549E+00	1.8730E+01	1.8730E+01	5.7705E+00	5.7705E+00	15
1.6[illegible]E+00	6.4657E-02	5.0819E-01	5.0431E+01	4.9549E+00	1.9427E+01	1.9427E+01	5.0742E+00	5.0742E+00	16
1.7[illegible]E+00	6.7805E-02	5.3411E-01	5.2991E+01	4.9549E+00	2.0091E+01	2.0091E+01	4.4101E+00	4.4101E+00	17
1.8[illegible]E+00	7.0963E-02	5.6011E-01	5.5552E+01	4.9549E+00	2.0742E+01	2.0742E+01	3.7594E+00	3.7594E+00	18
1.9[illegible]E+00	7.4132E-02	5.8620E-01	5.8112E+01	4.9549E+00	2.1334E+01	2.1334E+01	3.1660E+00	3.1660E+00	19
2.0[illegible]E+00	7.7312E-02	6.1239E-01	6.0672E+01	4.9549E+00	2.1851E+01	2.1851E+01	2.6503E+00	2.6503E+00	20
2.1[illegible]E+00	8.0504E-02	6.3869E-01	6.3236E+01	4.9549E+00	2.2480E+01	2.2480E+01	2.0214E+00	2.0214E+00	21
2.2[illegible]E+00	8.3709E-02	6.6511E-01	6.5801E+01	4.9549E+00	2.3013E+01	2.3013E+01	1.4878E+00	1.4878E+00	22
2.3[illegible]E+00	8.6927E-02	6.9167E-01	6.8367E+01	4.9549E+00	2.3528E+01	2.3528E+01	9.7326E-01	9.7326E-01	23
2.4[illegible]E+00	9.0160E-02	7.1838E-01	7.0933E+01	4.9549E+00	2.3901E+01	2.3901E+01	5.9978E-01	5.9978E-01	24
2.5[illegible]E+00	9.3408E-02	7.4526E-01	7.3497E+01	4.9549E+00	2.4164E+01	2.4164E+01	3.3703E-01	3.3703E-01	25
2.6[illegible]E+00	9.6672E-02	7.7233E-01	7.6061E+01	4.9549E+00	2.4370E+01	2.4370E+01	1.3080E-01	1.3080E-01	26
2.7[illegible]E+00	9.9954E-02	7.9960E-01	7.8625E+01	4.9549E+00	2.4464E+01	2.4464E+01	3.6846E-02	3.6846E-02	27
2.8[illegible]E+00	1.0326E-01	8.2710E-01	8.1189E+01	4.9549E+00	2.4501E+01	2.4501E+01	0	0	28
2.9[illegible]E+00	1.0659E-01	8.5485E-01	8.3753E+01	4.9549E+00	2.4501E+01	2.4501E+01	0	0	29

Y	D2U/DY2	J+V+	N2U+V+	EM/NU-S	EM/NU-0	ET/MU-MOM	
0	5.3845 +00	0	0	0	4.3783E-01	0	1
7.0000E-03	1.3663E+00	1.4513E+01	1.7242E+00	1.4164E+00	1.3901E+02	8.7220E+02	2
8.0000E-03	7.9223E+07	1.6975E+01	2.0168E+00	1.7485E+00	5.3638E+02	1.2424E+03	3
9.0000E-03	4.7542E+07	2.0854E+01	2.4776E+00	2.2694E+00	4.2428E+03	2.2290E+03	4
1.0000E-02	-9.1126E+07	2.4754E+01	2.9413E+00	2.7864E+00	6.5030E+02	2.2726E+03	5
1.2000E-02	-6.9397E+07	3.3205E+01	3.9451E+00	3.8688E+00	3.5635E+02	2.2332E+03	6
1.4000E-02	-3.8004E+07	4.1044E+01	4.8769E+00	4.8397E+00	2.8810E+02	1.8954E+03	7
1.8000E-02	-1.4487E+07	5.6624E+01	6.7275E+00	6.7194E+00	5.5036E+02	2.8435E+03	8
2.3000E-02	-7.5518E+06	7.6023E+01	9.0323E+00	9.0317E+00	4.9702E+02	2.9045E+03	9
2.7000E-02	-3.4834E+06	9.1714E+01	1.0897E+01	1.0894E+01	9.1411E+02	2.1859E+03	10
3.2000E-02	-1.4404E+06	1.1155E+02	1.3253E+01	1.3257E+01	3.4396E+03	2.6540E+03	11
4.2000E-02	-7.3472E+05	1.5314E+02	1.8195E+01	1.8197E+01	8.0348E+03	3.7264E+03	12
5.2000E-02	-4.7217E+05	1.9619E+02	2.3310E+01	2.3314E+01	1.2165E+04	4.8847E+03	13
7.2000E-02	-2.8235E+05	2.8771E+02	3.4182E+01	3.4189E+01	2.0124E+04	7.8411E+03	14
9.2000E-02	-2.0014E+05	3.8463E+02	4.5698E+01	4.5699E+01	2.3687E+04	1.0773E+04	15
1.1200E-01	-9.6[illegible]E+04	4.8564E+02	5.7701E+01	5.7701E+01	7.5055E+04	1.4379E+04	16
1.3200E-01	-6.1[illegible]E+04	5.8195E+02	7.0329E+01	7.0329E+01	1.6670E+05	1.0266E+04	17
1.5200E-01	-4.8[illegible]E+04	7.8372E+02	8.3608E+01	8.3608E+01	6.4027E+04	2.3816E+04	18
1.7200E-01	-9.423[illegible]E+04	8.1904E+02	9.7312E+01	9.7312E+01	4.2705E+04	2.7737E+04	19
1.9200E-01	-7.239[illegible]E+04	9.3443E+02	1.1126E+02	1.1126E+02	5.4448E+04	3.1437E+04	20
2.1700E-01	-5.450[illegible]E+04	1.0888E+03	1.2934E+02	1.2934E+02	5.4953E+04	3.7301E+04	21
2.4200E-01	-4.8[illegible]E+04	1.2431E+03	1.4769E+02	1.4769E+02	2.0435E+04	4.1093E+04	22
2.6700E-01	-1.1237E+05	1.4022E+03	1.6659E+02	1.6659E+02	7.4321E+03	4.1965E+04	23
2.9200E-01	-1.2084E+05	1.5574E+03	1.8508E+02	1.8508E+02	2.5391E+03	3.4832E+04	24
3.1700E-01	-1.0[illegible]E+05	1.7094E+03	2.0314E+02	2.0314E+02	1.3314E+03	3.1069E+04	25
3.4200E-01	-9.443[illegible]E+04	1.8601E+03	2.2103E+02	2.2103E+02	3.9991E+02	2.3147E+04	26
3.6700E-01	-[illegible]E+04	2.0047E+03	2.3810E+02	2.3810E+02	4.6414E+01	1.1198E+04	27
3.9200E-01	-1.[illegible]E+04	2.1434E+03	2.5479E+02	2.5479E+02	4.8692E+00	3.4852E+03	28
4.1700E-01	-1.132[illegible]E+04	2.2605E+03	2.7095E+02	2.7095E+02	-9.5724E-28	-5.1057E-04	29

A= .5955F3F24E-12 B= .7277350AE+00 CF/2= .16287132E-02 THETA CAL= .26035702E-01 M= 6.00

Y/DELTA*	Y/DELTA	Y*	Y**	UTAU*	U*	U**	1-U	(1-U)*	
0	0	0	0	4.8501E+00	0	0	2.4779E+01	2.4779E+01	1
1.1597E-01	2.3321E-02	9.4864E+00	9.8866E+00	4.8501E+00	9.2910E+00	9.2910E+00	1.5488E+01	1.5488E+01	2
1.4170E-01	2.8504E-02	1.2084E+01	1.2084E+01	4.8501E+00	9.6424E+00	9.6424E+00	1.5134E+01	1.5134E+01	3
1.6744E-01	3.3686E-02	1.4281E+01	1.4281E+01	4.8501E+00	1.0547E+01	1.0547E+01	1.4232E+01	1.4232E+01	4
1.9322E-01	3.8869E-02	1.6478E+01	1.6478E+01	4.8501E+00	1.1372E+01	1.1372E+01	1.3407E+01	1.3407E+01	5
2.4475E-01	4.9233E-02	2.0872E+01	2.0872E+01	4.8501E+00	1.2797E+01	1.2797E+01	1.1981E+01	1.1981E+01	6
2.9628E-01	5.9598E-02	2.5266E+01	2.5266E+01	4.8501E+00	1.3523E+01	1.3523E+01	1.1255E+01	1.1255E+01	7
3.9933E-01	8.0328E-02	3.4054E+01	3.4054E+01	4.8501E+00	1.4444E+01	1.4444E+01	1.0334E+01	1.0334E+01	8
5.2814E-01	1.0624E-01	4.5039E+01	4.5039E+01	4.8501E+00	1.5103E+01	1.5103E+01	9.6760E+00	9.6760E+00	9
6.3127E-01	1.2697E-01	5.3827E+01	5.3827E+01	4.8501E+00	1.5641E+01	1.5641E+01	9.1378E+00	9.1378E+00	10
7.6601E-01	1.5284E-01	6.4812E+01	6.4812E+01	4.8501E+00	1.6055E+01	1.6055E+01	8.7233E+00	8.7233E+00	11
1.0176E+00	2.0471E-01	8.6783E+01	8.6783E+01	4.8501E+00	1.7105E+01	1.7105E+01	7.673AE+00	7.6734E+00	12
1.2753E+00	2.5655E-01	1.0875E+02	1.0875E+02	4.8501E+00	1.8332E+01	1.8332E+01	6.4462E+00	6.4462E+00	13
1.7905E+00	3.6018E-01	1.5269E+02	1.5269E+02	4.8501E+00	1.9267E+01	1.9267E+01	5.5114E+00	5.5114E+00	14
2.3058E+00	4.6383E-01	1.9663E+02	1.9663E+02	4.8501E+00	2.0565E+01	2.0565E+01	4.213AE+00	4.213AE+00	15
2.8211E+00	5.674AE-01	2.405AE+02	2.405AE+02	4.8501E+00	2.1719E+01	2.1719E+01	3.0590E+00	3.0590E+00	16
3.3363E+00	6.7113E-01	2.8452E+02	2.8452E+02	4.8501E+00	2.2687E+01	2.2687E+01	2.091AE+00	2.091AE+00	17
3.8516E+00	7.747AE-01	3.2844E+02	3.2844E+02	4.8501E+00	2.3579E+01	2.3579E+01	1.1995E+00	1.1995E+00	18
4.3669E+00	8.7843E-01	3.7240E+02	3.7240E+02	4.8501E+00	2.4098E+01	2.4098E+01	6.8062E-01	6.8062E-01	19
4.8821E+00	9.8204E-01	4.1634E+02	4.1634E+02	4.8501E+00	2.4578E+01	2.4578E+01	2.0047E-01	2.0047E-01	20
5.5267E+00	1.111A E+00	4.7124E+02	4.7126E+02	4.8501E+00	2.4734E+01	2.4734E+01	4.4792E-02	4.4792E-02	21
6.1707E+00	1.2412E+00	5.2619E+02	5.2619E+02	4.8501E+00	2.4772E+01	2.4772E+01	6.885AE-03	6.885AE-03	22
6.8144E+00	1.370AE+00	5.8112E+02	5.8112E+02	4.8501E+00	2.4779E+01	2.4779E+01	0	0	23
7.4584E+00	1.5003E+00	6.3604E+02	6.3604E+02	4.8501E+00	2.4786E+01	2.4786E+01	-6.8839E-03	-6.8839E-03	24

Y	D2U/DY2	U*Y*	A2U*Y*	EM/NU-S	EM/NU-O	ET/NU-MOM	
0	4.0462 +08	0	0	0	9.2738E+00	0	1
4.5000E-03	1.3292E+08	9.1857E+01	1.0913E+00	7.2491E-01	2.3092E+02	4.1913E+02	2
5.5000E-03	7.254AE+07	1.1652E+02	1.3843E+00	1.0374E+00	9.2963E+02	6.4517E+02	3
6.5000E-03	3.895AE+07	1.5061E+02	1.7894E+00	1.4509E+00	7.9595E+03	1.2558E+03	4
7.5000E-03	-1.0500E+08	1.873AE+02	2.2262E+00	1.9864E+00	6.1397E+02	1.3791E+03	5
9.5000E-03	-8.324AE+07	2.6711E+02	3.1735E+00	3.0404E+00	2.5981E+02	1.4222E+03	6
1.1500E-02	-4.1104E+07	3.416AE+02	4.0595E+00	3.9894E+00	1.8848E+02	1.1698E+03	7
1.5500E-02	-1.2248E+07	4.9189E+02	5.8441E+00	5.8279E+00	6.5682E+02	1.4374E+03	8
2.0500E-02	-5.6920E+06	6.8021E+02	8.0816E+00	8.0791E+00	9.2214E+02	1.6892E+03	9
2.4500E-02	-3.A618E+05	8.4191E+02	1.0003E+01	1.0002E+01	1.2027E+05	1.9644E+03	10
2.9500E-02	3.9545E+05	1.0406E+03	1.2363E+01	1.2361E+01	1.8349E+05	3.4511E+03	11
3.9500E-02	-1.6900E+06	1.4844E+03	1.7636E+01	1.7634E+01	5.1968E+03	4.0668E+03	12
4.9500E-02	-1.2057E+06	1.9937E+03	2.3687E+01	2.3687E+01	4.1320E+03	5.7496E+03	13
6.9500E-02	-2.459AE+05	2.942AE+03	3.4953E+01	3.4953E+01	4.8146E+04	9.9359E+03	14
8.9502E-02	-2.1645E+04	4.043AE+03	4.8044E+01	4.8044E+01	7.8289E+06	1.4802E+04	15
1.095CE-01	-2.6977E+05	5.2251E+03	6.2078E+01	6.2074E+01	3.5711E+04	2.1354E+04	16
1.295DE-01	-3.2176E+05	6.454AE+03	7.6689E+01	7.6688E+01	1.4604E+04	2.4934E+04	17
1.495CE-01	-3.A79AE+05	7.7447E+03	9.2015E+01	9.2015E+01	5.7697E+03	2.AA61E+04	18
1.695CE-01	-3.955JE+05	8.974AE+03	1.0652E+02	1.0649E+02	1.3922E+03	2.2391E+04	19
1.895CE-01	-3.2194E+05	1.0233E+04	1.2158E+02	1.2158E+02	4.3278E+02	1.A528E+04	20
2.145CE-01	-1.9207E+05	1.165AE+04	1.3849E+02	1.3848E+02	2.2648E+01	5.A127E+03	21
2.395CE-01	-5.1544E+04	1.3035E+04	1.5486E+02	1.5484E+02	4.8544E+00	1.7425E+03	22
2.645DE-01	-1.3321E+04	1.4399E+04	1.7108E+02	1.7108E+02	8.7975E-11	4.A796E+02	23
2.895CE-01	-3.2415E+03	1.5765E+04	1.A730E+02	1.A73AE+02	2.5446E+13	2.2463E+01	24

RUN NO. A- 5 M= 25L9M/SQFT--R X= 6.00INCHES REYNOLDS NUMBER = 4.1374E+05

FREE STREAM PROPERTIES PS=3.7360 PT=3.6010 T=109.11 UINF= 121.171 FT/SEC RHO= .0669229 LBM/CUBICFT

THETA= .25978E-01 DELTA*= .38815E-01 DELTA= .19206E+00 UTAU=

Y INCHES	U/UINF	R	T/TINF	MU*DU/DY	DU/DY	A ALPHA	BETA	Y/DELTA	
0	0	1	1.0000E+00	3.3039E-01	2.6612E+04	0	0	0	1
4.500E-03	3.749E-01	2.6229E+02	1.0000E+00	4.5924E-01	3.6997E+04	9.4855E-04	3.2972E-04	2.3321E-02	2
5.500E-03	3.8914 -01	3.2044E+02	1.0000E+00	4.8789E-01	3.9305E+04	1.1430E-03	4.7665E-04	2.8504E-02	3
6.500E-03	4.2563E-01	3.7873E+02	1.0000E+00	6.9549E-01	5.3127E+04	1.7563E-03	6.4661E-04	3.3686E-02	4
7.500E-03	4.5893E-01	4.3700E+02	1.0000E+00	5.4408E-01	4.3825E+04	2.2037E-03	8.4638E-04	3.8869E-02	5
9.500E-03	5.1647E-01	5.5353E+02	1.0000E+00	3.4964E-01	2.8168E+04	3.1852E-03	1.2271E-03	4.9233E-02	6
1.150E-02	5.4577E-01	6.7004E+02	1.0000E+00	1.9629E-01	1.5811E+04	4.2484E-03	1.8889E-03	5.959AE-02	7
1.550E-02	5.8294E-01	9.0313E+02	1.0000E+00	1.3279E-01	1.0694E+04	5.9288E-03	3.1737E-03	8.032AE-02	8
2.050E-02	6.0950E-01	1.1945E+03	1.0000E+00	8.9189E-02	7.1846E+03	9.5647E-03	4.0861E-03	1.0624E-01	9
2.450E-02	6.3122E-01	1.4275E+03	1.0000E+00	7.2619E-02	5.8497E+03	1.2096E-02	6.9536E-03	1.2697E-01	10
2.950E-02	6.4795E-01	1.7189E+03	1.0000E+00	8.7998E-02	7.0885E+03	1.4372E-02	8.4420E-03	1.528AE-01	11
3.950E-02	6.9031E-01	2.3015E+03	1.0000E+00	7.0639E-02	5.6901E+03	2.2356E-02	1.2360E-02	2.0471E-01	12
4.950E-02	7.3985E-01	2.8842E+03	1.0000E+00	5.2249E-02	4.2089E+03	2.9782E-02	1.8654E-02	2.5653E-01	13
6.950E-02	7.7757E-01	4.0495E+03	1.0000E+00	4.1049E-02	3.3068E+03	4.5791E-02	3.0758E-02	3.601AE-01	14
8.950E-02	8.2994E-01	5.2148E+03	1.0000E+00	4.4324E-02	3.5707E+03	5.9190E-02	4.4789E-02	4.638AE-01	15
1.095E-01	8.7651E-01	6.3802E+03	1.0000E+00	3.9519E-02	3.1834E+03	8.1958E-02	6.8817E-02	5.674AE-01	16
1.295E-01	9.1558E-01	7.5456E+03	1.0000E+00	3.2989E-02	2.6577E+03	1.0206E-01	7.8880E-02	6.7113E-01	17
1.495E-01	9.5159E-01	8.7108E+03	1.0000E+00	2.6467E-02	2.1322E+03	1.2334E-01	9.8764E-02	7.747AE-01	18
1.695E-01	9.7253E-01	9.8761E+03	1.0000E+00	1.7299E-02	1.3931E+03	1.4568E-01	1.2029E-01	8.7843E-01	19
1.895E-01	9.9191E-01	1.1041E+04	1.0000E+00	1.0219E-02	8.2268E+02	1.4886E-01	1.4304E-01	9.820AE-01	20
2.145E-01	9.9819E-01	1.2496E+04	1.0000E+00	2.7064E-03	2.1805E+02	1.9873E-01	1.7276E-01	1.1116E+00	21
2.395E-01	9.9972E-01	1.3955E+04	1.0000E+00	6.7401E-04	5.4299E+01	2.2937E-01	2.0334E-01	1.2412E+00	22
2.645E-01	1.0000E+00	1.5411E+04	1.0000E+00	1.5474E-04	1.2467E+01	2.4066E-01	2.2465E-01	1.370AE+00	23
2.895E-01	1.0003E+00	1.6868E+04	1.0000E+00	8.5542E-05	6.9235E+01	2.9259E-01	2.465AE-01	1.5007E+00	24

A= .5955302[illegible]E-02 B= .7227750-E+00 CF/2= .13573867E-02 THETA WALL= .35444370E-01 X=10.00

Y/DEL(A*	Y/DEL(A	Y*	Y**	UTAL*	U*	U**	1-U	(1-U)*	
0	0	0	0	4.4830E+00	0	0	2.7142E+01	2.7142E+01	1
9.7116E-02	1.9827E-02	1.0013E+01	1.0013E+01	4.4830E+00	1.0260E+01	1.0260E+01	1.6882E+01	1.6882E+01	2
1.1654E-01	2.3792E-02	1.2015E+01	1.2015E+01	4.4830E+00	1.0802E+01	1.0802E+01	1.6341E+01	1.6341E+01	3
1.3596E-01	2.7757E-02	1.4018E+01	1.4018E+01	4.4830E+00	1.1671E+01	1.1671E+01	1.5471E+01	1.5471E+01	4
1.5539E-01	3.1722E-02	1.6020E+01	1.6020E+01	4.4830E+00	1.2440E+01	1.2440E+01	1.4702E+01	1.4702E+01	5
1.9423E-01	3.9653E-02	2.0026E+01	2.0026E+01	4.4830E+00	1.3249E+01	1.3249E+01	1.3894E+01	1.3894E+01	6
2.3308E-01	4.7584E-02	2.4031E+01	2.4031E+01	4.4830E+00	1.4263E+01	1.4263E+01	1.2880E+01	1.2880E+01	7
3.1077E-01	6.3445E-02	3.2041E+01	3.2041E+01	4.4830E+00	1.5334E+01	1.5334E+01	1.1807E+01	1.1807E+01	8
4.0746E-01	8.3271E-02	4.2054E+01	4.2054E+01	4.4830E+00	1.6163E+01	1.6163E+01	1.0979E+01	1.0979E+01	9
4.8558E-01	9.9133E-02	5.0064E+01	5.0064E+01	4.4830E+00	1.6584E+01	1.6584E+01	1.0558E+01	1.0558E+01	10
5.8279E-01	1.1896E-01	6.0077E+01	6.0077E+01	4.4830E+00	1.7070E+01	1.7070E+01	1.0072E+01	1.0072E+01	11
7.7693E-01	1.5861E-01	8.0102E+01	8.0102E+01	4.4830E+00	1.7988E+01	1.7988E+01	9.1547E+00	9.1547E+00	12
9.7116E-01	1.9827E-01	1.0013E+02	1.0013E+02	4.4830E+00	1.8611E+01	1.8611E+01	8.5315E+00	8.5315E+00	13
1.3594E+00	2.7757E-01	1.4018E+02	1.4018E+02	4.4830E+00	2.0054E+01	2.0054E+01	7.0884E+00	7.0884E+00	14
1.7481E+00	3.5688E-01	1.8023E+02	1.8023E+02	4.4830E+00	2.1156E+01	2.1156E+01	5.9867E+00	5.9867E+00	15
2.1364E+00	4.3618E-01	2.2028E+02	2.2028E+02	4.4830E+00	2.2148E+01	2.2148E+01	4.9945E+00	4.9945E+00	16
2.5251E+00	5.1549E-01	2.6033E+02	2.6033E+02	4.4830E+00	2.3111E+01	2.3111E+01	4.0317E+00	4.0317E+00	17
2.9135E+00	5.9480E-01	3.0038E+02	3.0038E+02	4.4830E+00	2.3946E+01	2.3946E+01	3.1966E+00	3.1965E+00	18
3.3020E+00	6.7410E-01	3.4043E+02	3.4043E+02	4.4830E+00	2.4810E+01	2.4810E+01	2.3320E+00	2.3320E+00	19
3.6904E+00	7.5341E-01	3.8049E+02	3.8049E+02	4.4830E+00	2.5502E+01	2.5502E+01	1.6400E+00	1.6400E+00	20
4.1768E+00	8.5254E-01	4.3055E+02	4.3055E+02	4.4830E+00	2.6269E+01	2.6269E+01	8.7302E-01	8.7302E-01	21
4.6618E+00	9.5167E-01	4.8061E+02	4.8061E+02	4.4830E+00	2.6742E+01	2.6742E+01	4.0056E-01	4.0056E-01	22
5.1472E+00	1.0508E+00	5.3068E+02	5.3068E+02	4.4830E+00	2.7011E+01	2.7011E+01	1.3160E-01	1.3160E-01	23
5.6327E+00	1.1498E+00	5.8074E+02	5.8074E+02	4.4830E+00	2.7086E+01	2.7086E+01	5.6324E-02	5.6324E-02	24
6.1183E+00	1.2491E+00	6.3081E+02	6.3081E+02	4.4830E+00	2.7131E+01	2.7131E+01	1.1255E-02	1.1255E-02	25
6.6036E+00	1.3482E+00	6.8087E+02	6.8087E+02	4.4830E+00	2.7142E+01	2.7142E+01	0	0	26
7.0889E+00	1.4473E+00	7.3093E+02	7.3093E+02	4.4830E+00	2.7142E+01	2.7142E+01	0	0	27

Y	D2U/D 2	U*Y*	%2U*Y*	EM/NU-S	EM/NU-O	ET/MU-MOM	
0	-6.1051E+07	0	0	0	7.5044E+03	0	1
5.0000E-03	-5.6799E+07	1.0273E-02	1.2206E+00	8.6044E-01	2.4002E+03	5.4068E+02	2
6.0000E-03	-5.5949E+07	1.2979E-02	1.5420E+00	1.2121E+00	1.7624E+03	8.2398E+02	3
7.0000E-03	-5.8086E+07	1.6361E-02	1.9439E+00	1.6654E+00	1.3540E+03	1.0532E+03	4
8.0000E-03	-6.8154E+07	1.9929E-02	2.3678E+00	2.1468E+00	4.9477E+02	1.0941E+03	5
1.0000E-02	-3.4975 E+07	2.4531E-02	3.1521E+00	3.0174E+00	8.5169E+02	1.3132E+03	6
1.2000E-02	-2.6605E+07	3.4274E-02	4.8721E+00	4.0029E+00	7.9191E+02	1.5380E+03	7
1.6000E-02	-1.7357E+07	4.9137E-02	5.8380E+00	5.8214E+00	3.9314E+02	1.6285E+03	8
2.1000E-02	-7.3253 E+06	6.7972E-02	8.0758E+00	8.0734E+00	5.3719E+02	1.7515E+03	9
2.5000E-02	-3.3121E+06	8.3034E-02	9.8655E+00	9.8654E+00	1.3730E+03	1.0994E+03	10
3.0000E-02	-1.3653 E+06	1.0254E-01	1.2184E+01	1.2184E+01	4.5874E+03	2.3840E+03	11
4.0000E-02	-5.4708E+05	1.4489E-01	1.7119E+01	1.7119E+01	2.0830E+04	3.8145E+03	12
5.0000E-02	-3.6332E+05	1.8634E-01	2.2140E+01	2.2140E+01	3.3799E+04	5.3311E+03	13
7.0000E-02	-2.7867E+05	2.8111E-01	3.3399E+01	3.3399E+01	4.0625E+04	9.3090E+03	14
9.0000E-02	-2.4614E+05	3.8129E-01	4.5301E+01	4.5301E+01	3.0344E+04	1.2853E+04	15
1.1000E-01	-1.1772E+05	4.8784E-01	5.7965E+01	5.7965E+01	1.0189E+05	1.7592E+04	16
1.3000E-01	-9.4A2E +04	6.0165E-01	7.1482E+01	7.1482E+01	1.3322E+05	2.3249E+04	17
1.5000E-01	-1.061AE+05	7.1929E-01	8.5459E+01	8.5459E+01	8.3776E+04	2.8596E+04	18
1.7000E-01	-1.410[illegible]E+05	8.4464E-01	1.0035E+02	1.0035E+02	3.9164E+04	3.4441E+04	19
1.9000E-01	-2.117AE+05	9.7031E-01	1.1528E+02	1.1528E+02	1.0192E+04	3.8019E+04	20
2.1500E-01	-2.3742E+05	1.1311E+00	1.3438E+02	1.3438E+02	3.3560E+03	3.4373E+04	21
2.4000E-01	-2.3113E+05	1.2952E+00	1.5270E+02	1.5270E+02	6.8152E+02	2.4729E+04	22
2.6500E-01	-1.5377E+05	1.4331E+00	1.7030E+02	1.7030E+02	1.6715E+02	1.4782E+04	23
2.9000E-01	-7.7613E+04	1.5736E+00	1.8689E+02	1.8689E+02	2.6410E+01	5.9029E+03	24
3.1500E-01	-2.A98AE+04	1.7114E+00	2.0334E+02	2.0334E+02	2.1417E+01	3.2199E+03	25
3.4000E-01	-1.4423E+04	1.8480E+00	2.1957E+02	2.1957E+02	6.3084E+01	7.8095E+02	26
3.6500E-01	-3.1063E+03	1.9839E+00	2.3571E+02	2.3571E+02	6.3084E-10	5.7885E+04	27

RUN NO. A= 6 M= 25LHM/SQFT-HR X=10.881INCHES REYNOLDS NUMBER = 6.3851E+05

FREE STREAM PROPERTIES PS=4.1320 PT=3.6180 T=112.12 UINF= 121.783 FT/SEC RHO= .0665259 LBM/CUBICFT

THETA= .35209E-01 DELTA*= .51485E-01 DELTA= .25219E+00 UTAU= 0

Y INCHES	U/UINF	R	Y/DELTA	MU*RHO/DY	DU/DY	ALPHA	BETA	Y/DELTA	
0	0	0	1.0000E+00	8.7249E-01	7.8285E+04	0	0	0	1
5.0000E-03	3.7802E-01	2.9261E-02	1.0000E+00	5.6861E-01	4.5804E+04	1.0793E-03	3.7228E-04	1.9827E-02	2
6.0000E-03	3.9794E-01	3.5113E-02	1.0000E+00	5.0784E-01	4.0913E+04	1.4700E-03	5.9401E-04	2.3793E-02	3
7.0000E-03	4.3001E-01	4.0966E-02	1.0000E+00	4.7284E-01	3.8419E+04	1.8904E-03	7.8007E-04	2.7759E-02	4
8.0000E-03	4.5832E-01	4.6818E-02	1.0000E+00	3.7934E-01	3.0557E+04	2.3348E-03	8.9638E-04	3.1725E-02	5
1.0000E-02	4.8811E-01	5.8522E-02	1.0000E+00	2.9134E-01	2.3473E+04	3.2907E-03	1.2504E-03	3.9655E-02	6
1.2000E-02	5.2547E-01	7.0227E-02	1.0000E+00	2.3697E-01	1.9091E+04	4.3161E-03	1.6723E-03	4.7586E-02	7
1.6000E-02	5.6501E-01	9.3635E-02	1.0000E+00	1.4117E-01	1.1371E+04	6.8215E-03	3.0747E-03	6.3448E-02	8
2.1000E-02	5.9550E-01	1.2290E-01	1.0000E+00	8.8129E-02	7.0994E+03	9.4728E-03	4.7869E-03	8.3271E-02	9
2.5000E-02	6.1107E-01	1.4631E-01	1.0000E+00	7.8679E-02	5.7181E+03	1.1936E-02	6.2690E-03	9.9133E-02	10
3.0000E-02	6.2891E-01	1.7557E-01	1.0000E+00	5.8779E-02	4.7347E+03	1.5125E-02	8.9507E-03	1.1894E-01	11
4.0000E-02	6.6272E-01	2.3409E-01	1.0000E+00	5.2889E-02	4.2614E+03	2.1795E-02	1.2551E-02	1.5861E-01	12
5.0000E-02	6.8567E-01	2.9261E-01	1.0000E+00	4.7319E-02	3.8117E+03	2.8842E-02	1.7307E-02	1.9827E-01	13
7.0000E-02	7.3884E-01	4.0966E-01	1.0000E+00	4.2159E-02	3.3954E+03	4.3966E-02	2.8100E-02	2.7757E-01	14
9.0000E-02	7.7943E-01	5.2670E-01	1.0000E+00	3.5208E-02	2.8364E+03	6.0353E-02	4.0540E-02	3.5688E-01	15
1.1000E-01	8.1599E-01	6.4374E-01	1.0000E+00	3.2241E-02	2.5973E+03	7.7914E-02	5.4571E-02	4.3618E-01	16
1.3000E-01	8.5146E-01	7.6079E-01	1.0000E+00	2.8574E-02	2.4590E+03	9.6587E-02	7.0140E-02	5.1548E-01	17
1.5000E-01	8.8223E-01	8.7783E-01	1.0000E+00	2.8208E-02	2.2718E+03	1.1437E-01	8.7304E-02	5.9480E-01	18
1.7000E-01	9.1408E-01	9.9488E-01	1.0000E+00	2.6443E-02	2.1302E+03	1.3722E-01	1.0605E-01	6.7410E-01	19
1.9000E-01	9.3958E-01	1.1119E+00	1.0000E+00	2.2134E-02	1.7834E+03	1.5911E-01	1.2637E-01	7.5341E-01	20
2.1500E-01	9.6784E-01	1.2582E+00	1.0000E+00	1.6498E-02	1.3297E+03	1.8781E-01	1.4837E-01	8.5258E-01	21
2.4000E-01	9.8524E-01	1.4045E+00	1.0000E+00	9.5294E-03	7.6748E+02	2.1788E-01	1.8304E-01	9.5187E-01	22
2.6500E-01	9.9515E-01	1.5508E+00	1.0000E+00	4.5449E-03	3.6609E+02	2.4880E-01	2.1377E-01	1.0508E+00	23
2.9000E-01	9.9792E-01	1.6971E+00	1.0000E+00	1.5574E-03	1.2548E+02	2.8062E-01	2.4547E-01	1.1498E+00	24
3.1500E-01	9.9959E-01	1.8434E+00	1.0000E+00	7.1700E-04	5.7843E+01	3.1314E-01	2.7794E-01	1.2481E+00	25
3.4000E-01	1.0000E+00	1.9896E+00	1.0000E+00	1.4604E-04	1.1764E+01	3.4632E-01	3.1113E-01	1.3482E+00	26
3.6500E-01	1.0000E+00	2.1361E+00	1.0000E+00	1.1784E-10	9.4956E-06	3.8013E-01	3.4494E-01	1.4479E+00	27

THE MAX SHEAR AT POINT 9 IS CF/CFW = 1.31059E+00

	Y/DELTA	(UMAX-U)/UTMAX	FRST/UTMAX*DELTA	Y*MAX	U*MAX	CF/2
1	0	2.1525E+01	0	0	0	1.3093E-03
2	1.9827E-02	1.4432E+01	9.0161E-03	1.1552E+01	8.8929E+00	1.6846E-03
3	2.3792E-02	1.4163E+01	9.6678E-03	1.3843E+01	9.3023E+00	1.6996E-03
4	2.7757E-02	1.3809E+01	8.1259E-03	1.6173E+01	1.0114E+01	1.7243E-03
5	3.1742E-02	1.2743E+01	7.7054E-03	1.8484E+01	1.0782E+01	1.7463E-03
6	3.9693E-02	1.2042E+01	1.0244E-02	2.3105E+01	1.1487E+01	1.7829E-03
7	4.7584E-02	1.1143E+01	1.2764E-02	2.7726E+01	1.2362E+01	1.7965E-03
8	6.3445E-02	1.0237E+01	2.1624E-02	3.6967E+01	1.3202E+01	1.8027E-03
9	8.3271E-02	9.5140E+00	3.4716E-02	4.8928E+01	1.4000E+01	1.8044E-03
10	9.9133E-02	9.1496E+00	4.2065E-02	5.7742E+01	1.4374E+01	1.8024E-03
11	1.1896E-01	8.7301E+00	5.1667E-02	6.9314E+01	1.4705E+01	1.7998E-03
12	1.5861E-01	7.9347E+00	5.6438E-02	9.2419E+01	1.5591E+01	1.7938E-03
13	1.9827E-01	7.4044E+00	6.1369E-02	1.1552E+02	1.6131E+01	1.7998E-03
14	2.7757E-01	6.1439E+00	6.9064E-02	1.6173E+02	1.7301E+01	1.8198E-03
15	3.5688E-01	5.1888E+00	7.1869E-02	2.0794E+02	1.8336E+01	1.8491E-03
16	4.3618E-01	4.3289E+00	7.0558E-02	2.5415E+02	1.9194E+01	1.8456E-03
17	5.1590E-01	3.4944E+00	6.4867E-02	3.0036E+02	2.0031E+01	1.8288E-03
18	5.9480E-01	2.7706E+00	5.8661E-02	3.4657E+02	2.0799E+01	1.7701E-03
19	6.7410E-01	2.0213E+00	4.9914E-02	3.9278E+02	2.1584E+01	1.7052E-03
20	7.5341E-01	1.4214E+00	4.5061E-02	4.3899E+02	2.2184E+01	1.6804E-03
21	8.5294E-01	7.5668E-01	4.2849E-02	4.9479E+02	2.2769E+01	1.6795E-03
22	9.5187E-01	3.4718E-01	4.7216E-02	5.5491E+02	2.3179E+01	1.6933E-03
23	1.0508E+00	1.1487E-01	5.8464E-02	6.1927E+02	2.3411E+01	1.5881E-03
24	1.1490E+00	4.8818E-02	8.5881E-02	6.7804E+02	2.3474E+01	1.6258E-03
25	1.2491E+00	9.7554E-03	5.7663E-02	7.2788E+02	2.3515E+01	1.6439E-03
26	1.3482E+00	0	4.4308E-02	7.8456E+02	2.3529E+01	1.5447E-03
27	1.4473E+00	0	0	8.4372E+02	2.3529E+01	0

(CFMAX - CFWALL)/2 = 4.3761E-04

(CFMAX - CFWALL)/CFMAX = 2.4219E-01

(CFMAX - CFWALL)@CFWALL = 1.1959E-01

MASS= .25?125?0E+02 x=10.0 INCHES F= .866240A1E-03 ZETA= .A3810649E+00

Y INCHES	Ro	CF/	EPSILON T	EPSILON D	CF/CFM	E-T/MU	E-D/D12	SC*	
0	0	1.3693E-03	0	0	1.0000E+00	0	0	0	1
5.0000E-03	2.7246E+02	1.A844E-03	3.6271E-05	-3.5140E-04	1.2303E+00	2.0220E+00	-4.?707E-01	0	2
6.0000E-03	3.2695E+02	1.A99AE-03	4.0078E-05	-4.0784E-04	1.2414E+00	3.?012E+00	-5.?03AE-01	0	3
7.0000E-03	3.8148E+02	1.725?E-03	4.4203E-05	-4.3133E-04	1.2800E+00	3.6A33E+00	-5.A090E-01	0	4
8.0000E-03	4.3594E+02	1.7461E-03	5.6368E-05	-5.17A7E-04	1.2754E+00	4.6410E+00	-A.?317E-01	0	5
1.0000E-02	5.4492E+02	1.7A29E-03	7.4075E-05	-5.9?8AE-04	1.2874E+00	5.0A75E+00	-7.?22AE-01	0	6
1.2000E-02	A.5391E+02	1.7A65E-03	9.2299E-05	-6.A102E-04	1.3847E+00	7.4?56E+00	-A.?357E-01	0	7
1.6000E-02	A.7188E+02	1.A027E-03	1.5A36E-04	-7.2F27E-04	1.3165E+00	1.2507E+01	-9.470AE-01	0	8
2.1000E-02	1.1443E+03	1.A069E-03	2.9183E-04	-7.774AE-04	1.3194E+00	2.A223E+01	-1.A100E+00	0	9
2.5000E-02	1.3627E+03	1.A024E-03	3.1989E-04	-7.9?0AE-04	1.3163E+00	2.5A46E+01	-1.A31AE+00	0	10
3.0000E-02	1.A34AE+03	1.793?E-03	3.7360E-04	-8.039AE-04	1.3094E+00	3.0A97E+01	-1.A45AE+00	0	11
4.0000E-02	2.1797E+03	1.763AE-03	4.8A04E-04	-8.0618E-04	1.2875E+00	3.9A72E+01	-1.A4A2E+00	0	12
5.0000E-02	2.7246E+03	1.715AE-03	4.4375E-04	-8.0F27E-04	1.2524E+00	3.A749E+01	-1.A511E+00	0	13
7.0000E-02	3.A145E+03	1.6194E-03	4.7047E-04	-8.0E4AE-04	1.1A3AE+00	3.7001E+01	-1.A48AE+00	0	14
9.0000E-02	4.9043E+03	1.4951E-03	5.1998E-04	-8.0E4AE-04	1.0919E+00	4.1A83E+01	-1.A513E+00	0	15
1.1000E-01	5.9942E+03	1.343AE-03	5.1820E-04	-8.050AE-04	0.8121E-01	4.1102E+01	-1.A469E+00	0	16
1.3000E-01	7.084AE+03	1.170AE-03	4.6027E-04	-7.9540E-04	A.5444E-01	3.7A04E+01	-1.A39AE+00	0	17
1.5000E-01	A.1730E+03	9.7701E-04	4.2417E-04	-7.9574E-04	7.1352E-01	3.4171E+01	-1.A34AE+00	0	18
1.7000E-01	9.2637E+03	7.7952E-04	3.6093E-04	-7.9130E-04	5.6020E-01	2.9A76E+01	-1.A291E+00	0	19
1.9000E-01	1.0354E+04	A.0094E-04	3.1234E-04	-7.9E09E-04	4.3807E-01	2.A774E+01	-1.A364E+00	0	20
2.1500E-01	1.1716E+04	4.175AE-04	3.0084E-04	-8.093AE-04	3.0494E-01	2.A961E+01	-1.A524E+00	0	21
2.4000E-01	1.307AE+04	2.656AE-04	3.4142E-04	-8.3009E-04	1.9400E-01	2.7505E+01	-1.A80AE+00	0	22
2.6500E-01	1.4440E+04	1.569?E-04	4.2275E-04	-8.4E49E-04	1.1459E-01	3.A057E+01	-1.103AE+00	0	23
2.9000E-01	1.5803E+04	7.A25AE-05	.1922E-04	-8.6004E-04	5.7152E-02	4.0962E+01	-1.118AE+00	0	24
3.1500E-01	1.7165E+04	2.445?E-05	4.1094E-04	-8.6339E-04	1.7854E-02	3.?90?E+01	-1.1227E+00	0	25
3.4000E-01	1.8527E+04	5.5467E-06	4.6495E-04	-8.6564E-04	4.0904E-03	3.7457E+01	-1.1257E+00	0	26
3.6500E-01	1.9890E+04	0	0	-8.6624E-04	0	0	-1.1265E+00	0	27

A= .595530?6E-02 B=-.18564045E+00 GAMMA CA= 0

Y/DELTA	ET/(UT*DELTA)	EM/MU-0	ET/MU-MOM	E-T/MU	
0	0	7.9044E+03	0	0	1
1.9827E-02	5.7622E-03	2.4082E+03	A.4868E+02	2.922AE+00	2
2.3792E-02	A.5090E-03	1.7624E+03	A.2398E+02	3.3019E+00	3
2.7757E-02	7.0366E-03	1.354AE+03	1.0532E+03	3.5683E+00	4
3.1722E-02	A.954?E-03	4.9477E+02	1.0041E+03	4.541AE+00	5
3.9653E-02	1.1768E-02	A.516AE+02	1.3132E+03	5.9679E+00	6
4.7584E-02	1.4663E-02	7.0191E+02	1.5380E+03	7.435AE+00	7
6.3445E-02	2.4840E-02	3.031AE+02	1.A285E+03	1.2597E+01	8
8.3271E-02	3.9870E-02	9.3719E+02	1.7515E+03	2.022?E+01	9
9.9133E-02	4.9390E-02	1.373AE+03	1.9094E+03	2.504AE+01	10
1.189AE-01	5.9351E-02	4.9874E+03	2.3A40E+03	3.0097E+01	11
1.5861E-01	A.4823E-02	2.083AE+04	3.A145E+03	3.2879E+01	12
1.9827E-01	7.0497 -02	3.3799E+04	5.3311E+03	3.5749E+01	13
2.7757E-01	7.4741E-02	4.0625E+04	9.3090E+03	3.7501E+01	14
3.568AE-01	A.2593E-02	3.0344E+04	1.2853E+04	4.1803E+01	15
4.361AE-01	A.1052E-02	1.0189E+05	1.7582E+04	4.1102E+01	16
5.1546E-01	7.4550E-02	1.3322E+05	2.3249E+04	3.7804E+01	17
5.948AE-01	A.7385E-02	8.377AE+04	2.A596E+04	3.417AE+01	18
6.741AE-01	5.733AE-02	3.916AE+04	3.4441E+04	2.907AE+01	19
7.534AE-01	5.2797E-02	1.0192E+04	3.A019E+04	2.6774E+01	20
8.5254E-01	4.9223E-02	3.856AE+03	3.4373E+04	2.4961E+01	21
9.5167E-01	5.4230E-02	A.A152E+02	2.4729E+04	2.750AE+01	22
1.050AE+00	A.7150E-02	1.A71AE+02	1.4382E+04	3.4057E+01	23
1.1496E+00	9.7736E-02	2.6410E+01	5.0029E+03	4.0569E+01	24
1.2491E+00	A.A230E-02	2.1417E+01	3.2109E+03	3.359AE+01	25
1.3486E+00	7.3864 -02	A.3084E+01	7.A095E+02	3.7457E+01	26
1.4473E+00	0	A.3084E-14	A.7885E-04	0	27

A= .59553?24E-?2 B= .?227350?E-0? CF/2= 11?506?8E-02 THETA CAL= .4?972?32E-01 X=14.00

Y/DEL(A)*	Y/DEL*A	Y*	Y**	UTAU*	U*	U**	1-U	(1-U)*	
0	0	0	0	4.1914E+00	0	0	2.8049E+01	2.8049E-01	1
9.8191E-02	2.0467E-02	1.2211E-01	1.2211E-01	4.1914E+00	1.0872E+01	1.0872E+01	1.8177E-01	1.8177E-01	2
1.1330E-01	2.3614E-02	1.4089E-01	1.4089E-01	4.1914E+00	1.1332E+01	1.1332E+01	1.7717E-01	1.7717E-01	3
1.2846E-01	2.6784E-02	1.5968E-01	1.5968E-01	4.1914E+00	1.2191E+01	1.2191E+01	1.6859E-01	1.6859E-01	4
1.4351E-01	2.9913E-02	1.7847E-01	1.7847E-01	4.1914E+00	1.2903E+01	1.2903E+01	1.6146E-01	1.6146E-01	5
1.7372E-01	3.6211E-02	2.1604E-01	2.1604E-01	4.1914E+00	1.4032E+01	1.4032E+01	1.5014E-01	1.5014E-01	6
2.0394E-01	4.2508E-02	2.5361E-01	2.5361E-01	4.1914E+00	1.4448E+01	1.4448E+01	1.4601E-01	1.4601E-01	7
2.6436E-01	5.5103E-02	3.2875E-01	3.2875E-01	4.1914E+00	1.5021E+01	1.5021E+01	1.3227E-01	1.3227E-01	8
3.3906E-01	7.0687E-02	4.2268E-01	4.2268E-01	4.1914E+00	1.6546E+01	1.6546E+01	1.2503E-01	1.2503E-01	9
4.0032E-01	8.3442E-02	4.9783E-01	4.9783E-01	4.1914E+00	1.7071E+01	1.7071E+01	1.197AE-01	1.197AE-01	10
4.7505E-01	9.9106E-02	5.9174E-01	5.9174E-01	4.1914E+00	1.7613E+01	1.7613E+01	1.143AE-01	1.1436E-01	11
6.2691E-01	1.3067E-01	7.7962E-01	7.7962E-01	4.1914E+00	1.8501E+01	1.8501E+01	1.054AE-01	1.054AE-01	12
7.7798E-01	1.6214E-01	9.6748E-01	9.6748E-01	4.1914E+00	1.8953E+01	1.8953E+01	1.009AE-01	1.0096E-01	13
1.0801E+00	2.2514E-01	1.3432E+00	1.3432E+00	4.1914E+00	2.0484E+01	2.0484E+01	8.564AE+00	8.5648E+00	14
1.3822E+00	2.8811E-01	1.7189E+00	1.7189E+00	4.1914E+00	2.1593E+01	2.1593E+01	7.455AE+00	7.455AE+00	15
1.6844E+00	3.5109E-01	2.0946E+00	2.0946E+00	4.1914E+00	2.2520E+01	2.2520E+01	6.529AE+00	6.5291E+00	16
1.9865E+00	4.1406E-01	2.4704E+00	2.4704E+00	4.1914E+00	2.3429E+01	2.3429E+01	5.619AE+00	5.6195E+00	17
2.2886E+00	4.7704E-01	2.8461E+00	2.8461E+00	4.1914E+00	2.4252E+01	2.4252E+01	4.796AE+00	4.7965E+00	18
2.5907E+00	5.4001E-01	3.2218E+00	3.2218E+00	4.1914E+00	2.5044E+01	2.5044E+01	4.805AE+00	4.8051E+00	19
2.8926E+00	6.0298E-01	3.5975E+00	3.5975E+00	4.1914E+00	2.5797E+01	2.5797E+01	3.951AE+00	3.2515E+00	20
3.2705E+00	6.8171E-01	4.0672E+00	4.0672E+00	4.1914E+00	2.6617E+01	2.6617E+01	2.431AE+00	2.4310E+00	21
3.6482E+00	7.6042E-01	4.5368E+00	4.5368E+00	4.1914E+00	2.7365E+01	2.7365E+01	1.683AE+00	1.6835E+00	22
4.0256E+00	8.3914E-01	5.0065E+00	5.0065E+00	4.1914E+00	2.8015E+01	2.8015E+01	1.033AE+00	1.0336E+00	23
4.4031E+00	9.1786E-01	5.4761E+00	5.4761E+00	4.1914E+00	2.8459E+01	2.8459E+01	5.895?E-01	5.8952E-01	24
4.7812E+00	9.9658E-01	5.9458E+00	5.9458E+00	4.1914E+00	2.8768E+01	2.8768E+01	2.811AE-01	2.8114E-01	25
5.1588E+00	1.0753E+00	6.4154E+00	6.4154E+00	4.1914E+00	2.8953E+01	2.8953E+01	9.680?E-02	9.6802E-02	26
5.5365E+00	1.1540E+00	6.8851E+00	6.8851E+00	4.1914E+00	2.9021E+01	2.9021E+01	2.799?E-02	2.7991E-02	27
5.9141E+00	1.2327E+00	7.3547E+00	7.3547E+00	4.1914E+00	2.9049E+01	2.9049E+01	0	0	28
6.2918E+00	1.3115E+00	7.8244E+00	7.8244E+00	4.1914E+00	2.9049E+01	2.9049E+01	0	0	29

Y	D2U/DY2	U*Y*	A2U*Y*	EM/NU-S	EM/NU-0	ET/NU-MOM	
0	1.5657E+08	0	0	2.6469E+02	0	0	1
6.500?E-03	1.5607E+07	1.3275E-02	1.9772E+00	1.2519E+00	1.5099E+04	9.4474E+02	2
7.5000E-03	-6.0806E+06	1.596AE-02	1.8069E+00	1.6129E+00	9.0195E+04	1.8886E+03	3
8.500?E-03	-3.2136E+07	1.946AE-02	2.3128E+00	2.0838E+00	5.3369E+03	1.4531E+03	4
9.500?E-03	-9.5715E+07	2.302AE-02	2.7359E+00	2.5588E+00	1.7300E+02	1.3430E+03	5
1.150?E-02	-3.4527E+07	3.031AE-02	3.6018E+00	3.5038E+00	6.0106E+02	1.9330E+03	6
1.350?E-02	-1.928?E+07	3.6442E-02	4.3535E+00	4.2679E+00	7.8627E+02	1.9667E+03	7
1.750?E-02	-1.1336E+07	5.2014E-02	6.1797E+00	6.1600E+00	1.0473E+03	2.0330E+03	8
2.250?E-02	-7.8714E+06	6.9937E-02	8.3093E+00	8.3079E+00	4.1151E+02	1.9381E+03	9
2.650?E-02	-3.5476E+06	8.4904E-02	1.0097E+01	1.0097E+01	1.5000E+03	2.4312E+03	10
3.150?E-02	-2.5879E+06	1.0421E-01	1.2383E+01	1.2384E+01	8.5334E+02	2.9862E+03	11
4.150?E-02	-3.8652E+05	1.4421E-01	1.7136E+01	1.7134E+01	2.6342E+04	9.222E+03	12
5.150?E-02	-1.0942E+05	1.8337E-01	2.1786E+01	2.1784E+01	2.8761E+05	5.1878E+03	13
7.150?E-02	-2.5858E+05	2.7514E-01	3.2689E+01	3.2680E+01	4.5082E+04	9.9477E+03	14
9.150?E-02	-3.0147E+05	3.7117E-01	4.4099E+01	4.4090E+01	1.5025E+04	1.9032E+04	15
1.115?E-01	-1.2204E+05	4.7171E-01	5.6043E+01	5.6044E+01	6.5743E+04	1.4993E+04	16
1.315?E-01	-7.5460E+04	5.7879E-01	6.8766E+01	6.8764E+01	1.4614E+05	2.1870E+04	17
1.515?E-01	-7.561?E+04	6.9024E-01	8.2007E+01	8.2007E+01	1.2053E+05	2.4253E+04	18
1.715?E-01	-7.818?E+04	8.0?8?E-01	9.5?63E+01	9.5?63E+01	9.5042E+04	3.1792E+04	19
1.915?E-01	-8.9452E+04	9.2804E-01	1.1024E+02	1.1024E+02	5.6474E+04	3.4508E+04	20
2.165?E-01	-9.3701E+04	1.0824E+00	1.2862E+02	1.2862E+02	3.7347E+04	4.1868E+04	21
2.415?E-01	-1.1857E+05	1.2414E+00	1.4750E+02	1.475?E+02	1.5644E+04	4.8403E+04	22
2.665?E-01	-1.5154E+05	1.4024E+00	1.6664E+02	1.6664E+02	4.6225E+03	4.3590E+04	23
2.915?E-01	-1.4780E+05	1.5585E+00	1.8516E+02	1.8514E+02	1.5?80E+03	3.5013E+04	24
3.165?E-01	-1.2941E+05	1.7105E+00	2.0322E+02	2.0322E+02	6.2535E+02	2.7084E+04	25
3.415?E-01	-9.3442E+04	1.8574E+00	2.206?E+02	2.206?E+02	1.4427E+02	1.4334E+04	26
3.665?E-01	-5.4911E+04	1.9981E+00	2.3739E+02	2.3739E+02	2.0413E+01	6.8742E+03	27
3.915?E-01	-2.2184E+04	2.1365E+00	2.5383E+02	2.5384E+02	3.3510E+00	2.7454E+03	28
4.165?E-01	-7.2211E+03	2.2729E+00	2.7004E+02	2.7004E+02	5.4632E-10	5.8954E+04	29

RUN NO. A= 7 M= 25LBM/SQFT--HR X=14.00INCHES REYNOLDS NUMBER = 8.5131E+05

FREE STREAM PROPERTIES PS=4.1121 PT=3.6340 T=110.12 UINF= 121.755 FT/SEC RHO= .0667626 LBM/CUBICFT

THETA= .45207E-01 DELTA*= .46197E-01 DELTA= .31759E+00 UTAU= 0

Y INCHES	U/UINF	R	Y/YINF	MU*DU/DY	DU/DY	ALPHA	BETA	Y/DELTA	
0	0	0	1.0000E+00	5.3607E-01	4.3186E+04	0	0	0	1
6.500E-03	3.742E-01	3.8054E+02	1.0000E+00	4.4362E-01	3.5734E+04	1.3917E-03	4.4517E-04	2.0467E-02	2
7.500E-03	3.900E-01	4.3911E+02	1.0000E+00	4.294AE-01	3.4592E+04	1.7774E-03	4.127AE-04	2.3614E-02	3
8.500E-03	4.196E-01	4.9765E+02	1.0000E+00	5.076AE-01	4.0899E+04	2.1A79E-03	7.8010E-04	2.6764E-02	4
9.500E-03	4.441E-01	5.5620E+02	1.0000E+00	3.351AE-01	2.6994E+04	2.6250E-03	9.7014E-04	2.9913E-02	5
1.150E-02	4.830E-01	6.7329E+02	1.0000E+00	2.5719E-01	2.0719E+04	3.5540E-03	1.398BE-03	3.6211E-02	6
1.350E-02	4.973E-01	7.9039E+02	1.0000E+00	1.907AE-01	1.5366E+04	4.5467E-03	1.A861E-03	4.250AE-02	7
1.750E-02	5.446E-01	1.0246E+03	1.0000E+00	1.4720E-01	1.1866E+04	6.6679E-03	2.6963E-03	5.5103E-02	8
2.250E-02	5.695E-01	1.3173E+03	1.0000E+00	8.4599E-02	6.8148E+03	9.5017E-03	4.5725E-03	7.0847E-02	9
2.650E-02	5.876E-01	1.5515E+03	1.0000E+00	7.6814E-02	6.1883E+03	1.1A73E-02	5.9451E-03	8.3442E-02	10
3.150E-02	6.063E-01	1.8442E+03	1.0000E+00	5.1121E-02	4.1183E+03	1.4947E-02	7.7839E-03	9.9186E-02	11
4.150E-02	6.368E-01	2.4297E+03	1.0000E+00	4.5377E-02	3.6556E+03	2.1357E-02	1.1749E-02	1.3067E-01	12
5.150E-02	6.524E-01	3.0152E+03	1.0000E+00	4.340AE-02	3.4963E+03	2.8109E-02	1.A10AE-02	1.5214E-01	13
7.150E-02	7.051E-01	4.1861E+03	1.0000E+00	4.0657E-02	3.2754E+03	4.2572E-02	2.2973E-02	2.2514E-01	14
9.150E-02	7.433E-01	5.3571E+03	1.0000E+00	3.1884E-02	2.5688E+03	5.8224E-02	3.7304E-02	2.8811E-01	15
1.115E-01	7.752E-01	6.5280E+03	1.0000E+00	2.8542E-02	2.2994E+03	7.4053E-02	5.0014E-02	3.5109E-01	16
1.315E-01	8.065E-01	7.6990E+03	1.0000E+00	2.703AE-02	2.178AE+03	9.2497E-02	6.4055E-02	4.1406E-01	17
1.515E-01	8.348AE-01	8.8699E+03	1.0000E+00	2.537AE-02	2.0445E+03	1.1144E-01	7.9437E-02	4.7704E-01	18
1.715E-01	8.621E-01	1.0041E+04	1.0000E+00	2.3587E-02	1.9321E+03	1.3116E-01	9.4185E-02	5.4001E-01	19
1.915E-01	8.880E-01	1.1212E+04	1.0000E+00	2.208AE-02	1.7795E+03	1.5184E-01	1.1420E-01	6.0299E-01	20
2.165E-01	9.162AE-01	1.2674E+04	1.0000E+00	1.9P10E-02	1.5944E+03	1.7901E-01	1.3881E-01	6.8171E-01	21
2.415E-01	9.420E-01	1.4139E+04	1.0000E+00	1.7340E-02	1.3976E+03	2.0758E-01	1.654AE-01	7.6042E-01	22
2.665E-01	9.644E-01	1.5603E+04	1.0000E+00	1.560AE-02	1.0963E+03	2.3749E-01	1.9393E-01	8.3914E-01	23
2.915E-01	9.797E-01	1.7067E+04	1.0000E+00	9.377AE-03	7.5545E+02	2.6A58E-01	2.2416E-01	9.1786E-01	24
3.165E-01	9.903E-01	1.8531E+04	1.0000E+00	5.994AE-03	4.8292E+02	3.0070E-01	2.5582E-01	9.9658E-01	25
3.415E-01	9.966E-01	1.9994E+04	1.0000E+00	3.107AE-03	2.5035E+02	3.3371E-01	2.8861E-01	1.0753E+00	26
3.665E-01	9.990AE-01	2.1458E+04	1.0000E+00	1.135AE-03	9.1478E+01	3.6748E-01	3.2231E-01	1.1540E+00	27
3.915E-01	1.000E+00	2.2921E+04	1.0000E+00	3.395AE-04	2.7353E+01	4.0194E-01	3.5675E-01	1.2327E+00	28
4.165E-01	1.000E+00	2.4385E+04	1.0000E+00	7.5404E-11	6.0744E-06	4.3704E-01	3.9185E-01	1.3115E+00	29

THE MAX SHEAR AT POINT 10 IS CF/CFW = 1.41250E+00

	Y/DELTA	(UMAX-U)/UTMAX	EPST/UTMAX*DELTA	Y*MAX	U*MAX	CF/2
1	0	2.6100E+01	0	0	0	1.0393E-03
2	2.0467E-02	1.6332E+01	4.2189E-03	1.3590E+01	9.7680E+00	1.3483E-03
3	2.3616E-02	1.5919E+01	4.3855E-03	1.5691E+01	1.0181E+01	1.3958E-03
4	2.6794E-02	1.5147E+01	4.7751E-03	1.7772E+01	1.0953E+01	1.3786E-03
5	2.9843E-02	1.4507E+01	5.7933E-03	1.9843E+01	1.1597E+01	1.3965E-03
6	3.6211E-02	1.3492E+01	7.7[illegible]3E-03	2.4045E+01	1.2608E+01	1.4251E-03
7	4.2508E-02	1.3118E+01	1.0468E-02	2.8226E+01	1.2982E+01	1.4388E-03
8	5.51[illegible]3E-02	1.1885E+01	1.3790E-02	3.6598E+01	1.4215E+01	1.4811E-03
9	7.0847E-02	1.1234E+01	2.4060E-02	4.7044E+01	1.4844E+01	1.4659E-03
10	8.3442E-02	1.0762E+01	2.6567E-02	5.5407E+01	1.5338E+01	1.4808E-03
11	9.9186E-02	1.0275E+01	3.9902E-02	6.5842E+01	1.5825E+01	1.4673E-03
12	1.3007E-01	9.4775E+00	4.4696E-02	8.6770E+01	1.6623E+01	1.4588E-03
13	1.6216E-01	9.0709E+00	4.5856E-02	1.0748E+02	1.7029E+01	1.4316E-03
14	2.2514E-01	7.4954E+00	4.7578E-02	1.4950E+02	1.8405E+01	1.3019E-03
15	2.8811E-01	6.6988E+00	5.7751E-02	1.9131E+02	1.9401E+01	1.3246E-03
16	3.5109E-01	5.8664E+00	6.0380E-02	2.3313E+02	2.0234E+01	1.2397E-03
17	4.1406E-01	5.0491E+00	5.8837E-02	2.7495E+02	2.1051E+01	1.1442E-03
18	4.7704E-01	4.3096E+00	5.6572E-02	3.1476E+02	2.1790E+01	1.0327E-03
19	5.4001E-01	3.5984E+00	5.2443E-02	3.5858E+02	2.2501E+01	9.8472E-04
20	6.0299E-01	2.9215E+00	4.8110E-02	4.0040E+02	2.3170E+01	7.8441E-04
21	6.8171E-01	2.1851E+00	4.0959E-02	4.5267E+02	2.3915E+01	5.6304E-04
22	7.6042E-01	1.5126E+00	3.3564E-02	5.0494E+02	2.4587E+01	4.1924E-04
23	8.3946E-01	9.2866E-01	2.0034E-02	5.5721E+02	2.5171E+01	2.9408E-04
24	9.1786E-01	5.2967E-01	2.8255E-02	6.0948E+02	2.5570E+01	1.9099E-04
25	9.9658E-01	2.5260E-01	2.6552E-02	6.6175E+02	2.5847E+01	1.1449E-04
26	1.0723E+00	8.4329E-02	2.8600E-02	7.1402E+02	2.6014E+01	6.3832E-05
27	1.1540E+00	2.5190E-02	2.7077E-02	7.6629E+02	2.6075E+01	2.2117E-05
28	1.2327E+00	0	2.8530E-02	8.1856E+02	2.6100E+01	6.9880E-06
29	1.3115E+00	0	7.3984E-04	8.7084E+02	2.6100E+01	4.8130E-14

(CFMAX - CFWALL)/2 = 4.2870E-04

(CFMAX - CFWALL)/CFMAX = 2.9204E-01

(CFMAX - CFWALL)/CFWALL = 4.1250E-01

MASS= .2?9125??E-?2 Y=14.? INCHES F= .866240A1E-03 ZETA= .7309622BE+00

Y INCHES	M*	CF/?	EPSILON Y	EPSILON D	CF/CFM	E-T/MU	E-D/D12	SC*	
P	P	1.0397E-01	0	P	1.0000E+00	0	0	0	1
6.500E-01	3.542?E+?2	1.3461E-01	3.7155E-05	-4.5785E-04	1.2954E+00	2.0932E+00	-5.353AE-01	0	2
7.500E-01	4.0869E+?2	1.3554E-01	3.8657E-05	-4.6?9AE-04	1.3046E+00	3.1143E+00	-A.?72AE-01	0	3
8.500E-01	4.6319E+?2	1.3784E-01	3.324AE-05	-3.9018E-04	1.3256E+00	2.4783E+00	-5.A73?E-01	0	4
9.500E-01	5.17A8 +?2	1.3?96E-01	5.1020E-05	-5.4519E-04	1.3437E+00	4.1102E+00	-7.1409E-01	0	5
1.150E+00	A.?60AE+?2	1.4251E-01	A.7840E-05	-A.2007E-04	1.3713E+00	5.6A53E+00	-A.063AE-01	0	A
1.350E+00	7.35A8E+?2	1.4308E-01	9.1A40E-05	-A.8179E-04	1.3767E+00	7.?997E+00	-A.0651E-01	0	7
1.750E+00	9.53A?E+?2	1.4511E-01	1.2144E-04	-7.2118E-04	1.4058E+00	9.?A35E+00	-9.?67?E-01	0	8
2.250E+00	1.2261E+?3	1.4659E-01	2.1215E-04	-7.8104E-04	1.4105E+00	1.?001E+01	-1.A157E+00	0	9
2.650E+00	1.444?E+?3	1.4688E-01	2.3397E-04	-7.875?E-04	1.4125E+00	1.8A48E+01	-1.A241E+00	0	10
3.150E+00	1.71A8 +?3	1.4A74E-01	3.5141E-04	-8.128AE-04	1.4119E+00	2.?710E+01	-1.A57?E+00	0	11
4.150E+00	2.2614E+?3	1.4589E-01	3.9362E-04	-8.1?0AE-04	1.4038E+00	3.?710E+01	-1.A624E+00	0	12
5.150E+00	2.8064E+?3	1.4451E-01	4.0384E-04	-8.170AE-04	1.3775E+00	3.9534E+01	-1.A629E+00	0	13
7.150E+00	3.A962E+?3	1.3915E-01	4.1001E-04	-8.1?70E-04	1.3389E+00	3.?755E+01	-1.A60AE+00	0	14
9.150E+00	4.98A1E+?3	1.3?24E-01	5.0A60E-04	-8.2254E-04	1.274AE+00	4.A?3E+01	-1.A69AE+00	0	15
1.115E+01	6.?75?E+?3	1.2397E-01	5.3175E-04	-8.229AE-04	1.1928E+00	4.9A38E+01	-1.A701E+00	0	1A
1.315E+01	7.165AE+?3	1.1442E-01	5.1816E-04	-8.2040E-04	1.1010E+00	4.?743E+01	-1.A672E+00	0	17
1.515E+01	A.255A+?3	1.0327E-01	4.9?21E-04	-8.1?7AE-04	9.9372E-01	4.A136E+01	-1.A647E+00	0	1A
1.715E+01	9.3454E+?3	9.0472E-04	4.6185E-04	-8.1629E-04	A.7053E-01	3.?207E+01	-1.A614E+00	0	19
1.915E+01	1.043AE+?4	7.6441E-04	4.2369E-04	-8.151AE-04	7.3552E-01	3.4133E+01	-1.A60AE+00	0	20
2.165E+01	1.173?E+?4	5.8394E-04	3.A072E-04	-8.1458E-04	5.6187E-01	2.?A50E+01	-1.A592E+00	0	21
2.415E+01	1.31A8E+?4	4.1924E-04	2.9585E-04	-8.1619E-04	4.0340E-01	2.?A34E+01	-1.A613E+00	0	22
2.665E+01	1.4522E+?4	2.9401E-04	2.A450E-04	-8.228AE-04	2.8289E-01	2.?708E+01	-1.A71?E+00	0	23
2.915E+01	1.588?E+?4	1.9059E-04	2.4803E-04	-8.3534E-04	1.8339E-01	2.?A46E+01	-1.A86?E+00	0	24
3.165E+01	1.7247E+?4	1.1449E-04	2.3384E-04	-8.4560E-04	1.1017E-01	1.8A38E+01	-1.A997E+00	0	25
3.415E+01	1.A609E+?4	A.3932E-05	2.?187E-04	-8.5?32E-04	A.1514E-?2	2.?291E+01	-1.A122E+00	0	2A
3.665E+01	1.9971E+?4	2.2117E-05	2.3846E-04	-8.621AE-04	2.12?1E-?2	1.9211E+01	-1.A212E+00	0	27
3.915E+01	2.1334E+?4	A.9A8AE-A	2.5125E-04	-8.6509E-04	A.7047E-?3	2.?241E+01	-1.A249E+00	0	2A
4.165E+01	2.269AE+?4	4.?123E-14	A.5156E-AA	-A.6?24E-04	?.A617E-11	5.?A90E+01	-1.A264E+00	0	29

A= .595531?0E-?2 B=-.1941?041E+00 GAMMA CAL= 0

Y/DELTA	ET/(UT*UEL*TA)	EM/MU-D	ET/MU-MOM	E-T/MU	
C	P	2.6469E-?2	0	P	1
2.0487E-02	5.0141E-?3	1.509AE-04	8.4474E-?2	2.9533E+00	2
2.361AE-02	5.2169E-?3	9.0195E-04	1.0886E-?1	3.1143E+00	3
2.6764E-02	4.A867E-?3	5.33?5E-?1	1.6531E-?1	2.6789E+00	4
2.9913E-02	A.A853E-?3	1.730?E-?2	1.3A30E-?1	4.1109E+00	5
3.6211E-02	9.1552E-?3	A.010AE-?2	1.5?30E-?1	5.465?E+00	6
4.250AE-02	1.2394E-?2	7.A627E-?2	1.9AA7E-?1	7.3587E+00	7
5.5103E-02	1.6389E-?2	1.0473E-?1	2.A330E-?1	9.7835E+00	8
7.0847E-02	2.A63?E-?2	4.1151E-?2	1.?301E-?1	1.709AE+01	9
8.3442E-02	3.1574E-?2	1.5006E-?1	2.4312E-?1	1.A84AE+01	10
9.9184E-02	4.7424E-?2	A.5334E-?2	2.2A62E-?1	2.A31AE+01	11
1.3967E-01	5.A12?E-?2	2.A342E-?1	3.?222E-?1	3.171AE+01	12
1.621AE-01	5.A50AE-?2	2.A76?E-?1	5.1A7AE-?1	3.2534E+01	13
2.2514E-01	5.A54AE-?2	4.5082E-?1	9.3A77E-?1	3.3759E+01	14
2.8811E-01	A.A637E-?2	7.5025E-?1	1.?A32E-?A	4.0579E+01	15
3.5105E-01	7.17A1E-?2	A.576?E-?1	1.909?E-?A	4.2A3AE+01	1A
4.140AE-01	A.9927E-?2	1.4614E-??	2.1A70E-?A	4.174?E+01	17
4.7704E-01	4.7235E-?2	1.?04AE-??	2.62?3E-?A	4.013AE+01	1A
5.4001E-01	A.2327E-?2	9.5043E-?1	3.1792E-?A	3.7207E+01	19
6.029?E-01	5.717A?-?2	5.A47AE-??	3.6508E-?A	3.4133E+01	20
6.8171E-01	4.A6AAE-?2	1.7347E-?A	4.1A6AE-?A	2.90AAE+01	21
7.6042E-01	3.992AE-?2	1.5A44E-?A	4.5A03E-?A	2.3A34E+01	22
8.3914E-01	3.5A9E-?2	1.A225E-?1	4.?5A0E-?A	2.130AE+01	23
9.178AE-01	3.?5A?E-?2	1.5A8?E-?1	3.5013E-?A	2.004AE+01	24
9.9A5AE-01	3.1557E-?2	A.2575E-?1	2.?A44E-?A	1.8?3AE+01	25
1.0753E+00	3.099AE-?2	1.447?E-?1	1.A?34E-?A	2.0204E+01	26
1.154AE+00	3.21A1E-?2	2.A45?E-?1	A.A742E-?3	1.9211E-?1	27
1.2327E+00	3.3?7?E-?2	3.?51AE-?1	2.?A54E-?3	2.0234E+01	2A
1.311?E+00	A.?32AE-?A	3.4A32E-1?	5.A054E-?A	5.249AE-01	29

A= .5955?5?26E-?? B= .7??7?50+E+0 CF/2= 10A14670E-02 THETA CAL= .5+918?12E-01 X=18.00

Y/DELTA*	Y/DELTA	Y*	Y**	UTAU*	U*	U**	1-U	(1-U)*	
0	0	0	0	3.9557E+00	0	0	1.0694E+01	3.069 E+01	1
9.472Ee-02	1.942?E-?2	1.2451E+0?	1.2453E+01	3.9557E+00	1.0?A8E+01	1.0?A8E+01	1.072nE+01	1.072nE+01	2
1.0A2?E-01	2.2194?-?2	1.4232E+0?	1.4232E+01	3.9557E+00	1.1713E+01	1.1713E+01	1.0981E+01	1.0981E+01	3
1.217?E-01	2.49AAE-?2	1.A011E+0?	1.6011E+01	3.9557E+00	1.2AA1E+01	1.2A61E+01	1.0032E+01	1.0032E+01	4
1.353?E-01	2.7742?-?2	1.7790E+0?	1.7790E+01	3.9557E+00	1.3649E+01	1.3649E+01	1.0044E+01	1.0044E+01	5
1.623?E-01	3.329?E-?2	2.134-E+01	2.1348E+01	3.9557E+00	1.4896E+01	1.4896E+01	1.079AE+01	1.079AE+01	6
1.894?E-01	3.8839E-?2	2.490AE+01	2.4906E+01	3.9557E+00	1.56AAE+01	1.56A6E+01	1.0?00AE+01	1.0?00AE+01	7
2.435?E-01	4.993AE-?2	3.2022E+0?	3.2022E+01	3.9557E+00	1.6A42E+01	1.6A42E+01	1.0051E+01	1.0051E+01	8
3.112?E-01	A.3A0AE-?2	4.A917E+0?	4.0017E+01	3.9557E+00	1.7510E+01	1.7510E+01	1.0104E+01	1.0104E+01	9
3.653?E-01	7.4904E-?2	4.A033E+0?	4.8033E+01	3.9557E+00	1.7942E+01	1.7942E+01	1.0752E+01	1.0752E+01	10
4.3304E-01	A.A77AE-?2	5.692AE+0?	5.6920E+01	3.9557E+00	1.A52AE+01	1.A526E+01	1.0167E+01	1.0167E+01	11
5.0A37E-01	1.1652E-?1	7.471AE+0?	7.4710E+01	3.9557E+00	1.9A49E+01	1.9A63E+01	1.023nE+01	1.1230E+01	12
7.0366E-01	1.442AE-?1	9.250AE+0?	9.2508E+01	3.9557E+00	2.0107E+01	2.0107E+01	1.0587E+01	1.0587E+01	13
9.743?E-01	1.9979E-?1	1.2803E+02	1.2809E+02	3.9557E+00	2.1414E+01	2.1414E+01	9.2792E+00	9.2792E+00	14
1.245?E+00	2.552?E-?1	1.A367E+02	1.6367E+02	3.9557E+00	2.2451E+01	2.2451E+01	A.942AE+00	9.2426E+00	15
1.515?E+00	3.107?E-?1	1.9925E+02	1.9925E+02	3.9557E+00	2.3392E+01	2.3402E+01	7.301AE+00	7.301AE+00	16
1.7863E+00	3.662AE-?1	2.3483E+02	2.3483E+02	3.9557E+00	2.4285E+01	2.4285E+01	A.408?E+00	6.4081E+00	17
2.057?E+00	A.2168E-?1	2.7041E+02	2.7A41E+02	3.9557E+00	2.5014E+01	2.5018E+01	5.A75AE+00	5.5756E+00	18
2.327?E+00	A.7717E-?1	3.0599E+02	3.0599E+02	3.9557E+00	2.5775E+01	2.5775E+01	4.910AE+00	4.9104E+00	19
2.5903E+00	5.326AE-?1	3.4157E+02	3.4157E+02	3.9557E+00	2.6AA6E+01	2.6A66E+01	4.2273E+00	4.2273E+00	20
2.936?E+00	A.0201E-?1	3.8804E+02	3.8804E+02	3.9557E+00	2.7259E+01	2.7259E+01	3.A349E+00	3.4349E+00	21
3.2746E+00	A.7137E-?1	4.3052E+02	4.3052E+02	3.9557E+00	2.80?1E+01	2.8A01E+01	2.A129E+00	2.6129E+00	22
3.A132E+00	7.4072E-?1	4.7500E+02	4.7500E+02	3.9557E+00	2.9152E+01	2.9192E+01	1.9A12E+00	1.5A12E+00	23
3.9515E+00	A.1008E-?1	5.1947E+02	5.1947E+02	3.9557E+00	2.930AE+01	2.9308E+01	1.7857E+00	1.3857E+00	24
4.2A9?E+00	A.7943E-?1	5.6395E+02	5.6395E+02	3.9557E+00	2.9844E+01	2.9844E+01	A.407AE-01	8.407AE-01	25
4.620?E+00	9.4A70E-?1	A.0842E+02	A.0842E+02	3.9557E+00	3.0220E+01	3.0220E+01	4.7349E-01	4.7349E-01	26
4.9605E+00	1.0181E+00	A.5290E+02	A.5290E+02	3.9557E+00	3.0447E+01	3.0447E+01	2.4647E-01	2.4647E-01	27
5.3049E+00	1.087AE+00	A.9737E+02	A.9737E+02	3.9557E+00	3.0583E+01	3.0583E+01	1.1024E-01	1.1024E-01	28
5.6431E+00	1.1560E+00	7.418-E+02	7.4185E+02	3.9557E+00	3.0643E+01	3.0643E+01	5.0831E-02	5.0831E-02	29
5.9814E+00	1.2262 +00	7.8632E+02	7.8632E+02	3.9557E+00	3.0681E+01	3.0681E+01	1.970AE-02	1.2708E-02	30
6.3197E+00	1.295AE+00	A.308AE+02	A.30A0E+02	3.9557E+00	3.0694E+01	3.0694E+01	A	0	31

Y	D2U/D?2	U*Y*	N2U*Y*	EM/NU-S	EM/NU-O	ET/MU-MOM	
0	1.5748 +n8	0	0	A	1.0570E+03	0	1
7.0000E-03	-2.1?1?E+n6	1.365AE-0?	1.6228E+00	1.3024E+00	1.6710E+n4	1.2706E+03	2
8.0000E-03	-2.5002E+n7	1.AA69E-02	1.9885E+00	1.7879E+00	1.0348E+n4	1.A447E+n3	3
9.0000E-03	-4.1947E+n7	2.0272E-02	2.4n85E+00	2.1510E+00	4.1976E+n3	2.n388E+n?	4
1.0000E-02	-1.037?E+n8	2.428-E-02	2.8040E+00	2.7239E+00	?.2150E+n2	1.0988E+n?	5
1.2000E-02	-6.2727E+n7	?.1?00E-02	3.7781E+00	3.6517E+00	2.0896E+n2	1.7419E+n3	6
1.4000E-02	-2.709A E+n7	?.9067E-02	4.A416E+00	4.956AE+00	?.0295E+n2	1.5722E+n?	7
1.8000E-02	-1.0977E+n7	A.?292E-02	6.3316E+00	6.3204E+00	A.753AE+n2	1.7241E+n3	A
2.3000E-02	-5.145nE+n6	7.A44E-02	A.?120E+00	A.?107E+00	9.2345E+n2	1.0A07E+n?	9
2.7000E-02	-2.9424E+n6	A.6181E-02	1.0239E+01	1.0230E+01	1.5855E+n3	2.2A10E+n?	10
3.2000E-02	-1.63A2E+n6	1.n547E-01	1.2530E+01	1.253nE+01	2.9152E+n3	2.A332E+n?	11
4.2000E-02	-A.A34?E+n5	1.4543E-01	1.727AE+01	1.727nE+01	A.63A3E+n3	3.AA76E+n?	12
5.2000E-02	-4.3730E+n5	1.AA0nE-01	2.2n99E+01	2.2099E+01	1.3264E+n4	4.7A02E+n?	13
7.2000E-02	-2.?222E+n5	2.7429E-01	3.2580E+01	3.25A0E+01	3.1621E+n4	5.n225E+n?	14
9.2000E-02	-1.914AE+n5	3.A745E-01	4.3A57E+01	4.3659E+01	2.9202E+n4	1.1213E+n4	15
1.1200E-01	-1.2769E+n5	4.AA0AE-01	5.537AE+01	5.537nE+01	4.8639E+n4	1.5n40E+n4	16
1.3200E-01	-1.0092E+n5	5.7029E-01	6.775AE+01	6.775nE+01	4.882AE+n4	1.A029E+n4	17
1.5200E-01	-A.A89AE+n4	A.765-E-01	8.037AE+01	8.037nE+01	6.A267E+n4	2.5A91E+n4	18
1.7200E-01	-8.A094E+n4	7.A869E-01	9.3704E+01	9.3704E+01	A.43?2E+n4	2.A025E+n4	19
1.9200E-01	-7.?8A0E+n4	9.0401E-01	1.0741E+n2	1.0741E+02	2.3053E+n4	3.n952E+n4	20
2.1700E-01	-2.A3AEE+n4	1.A52?E-04	1.2503E+n2	1.2509E+n2	5.0500E+n5	6.5223E+n4	21
2.4200E-01	-1.1611E+n5	1.2089E-04	1.4363E+n2	1.436?E+n2	2.5301E+n4	5.7n84E+n4	22
2.6700E-01	-2.?44?E+n5	1.3A7?E-04	1.A652E+n2	1.6459E+n2	?.4117E+n3	4.A556E+n4	23
2.9200E-01	-1.1572E+n5	1.522?E-04	1.8nA8E+n2	1.80A8E+n2	1.0044E+n3	3.1031E+n4	24
3.1700E-01	-1.1448E+n4	1.6A3?E-04	1.9n9AE+n2	1.959nE+n2	7.0500E+n5	4.A134E+n4	25
3.4200E-01	-1.24..E+n5	1.83A?E-04	2.1845E+n2	2.1849E+n2	9.6023E+n3	3.7227E+n4	26
3.6700E-01	-9.2807 +n4	1.947?E-0.	2.3A18E+n2	2.3A19E+n2	?.5293E+n3	2.5?35E+n4	27
3.9200E-01	-5.A905E+n4	2.1?2AE-01	2.534nE+n2	2.534nE+n2	1.4677E+n3	1.A805E+n4	28
4.1700E-01	-1.430AE+n4	2.2?32E-0?	2.7008E+n2	2.7008E+n2	5.09A1E+n1	9.A179E+n3	29
4.4200E-01	-1.6A01E+n4	2.412-E-0?	2.8A63E+n2	2.8A63E+n2	2.2291E+n1	5.A107E+n3	30
4.6700E-01	-1.12AAE+n4	2.550 E-0	?.9297E+n2	3.0289E+n2	1.0209E+nn	1.4290E+n3	31

RUN NO. A= 8 M= 25LBM/SQFT-HR X=18.00INCHES REYNOLDS NUMBER = 1.8702E+06

FREE STREAM PROPERTIES PS=4.0173 PT=3.6260 T=109.11 UINF= 121.414 FT/SEC RHO= .0669008 LBM/CUBICFT

THETA= .50990E-01 DELTA*= .7389AE-01 DELTA= .36046E+00 UTAU= 0

Y INCHES	U/UINF	R	T/TINF	MU*DU/DY	DU/DY	ALPHA	BETA	Y/DELTA	
0	0	0	1.0000E+00	8.5409E-01	A.8800E+04	0	0	0	1
7.0000E-03	3.5734E-01	4.0868E-02	1.0000E+00	5.753?E-01	4.6349E+04	1.?956E-03	4.9413E-04	1.9420E-02	2
8.0000E-03	3.8160E-01	4.6707E-02	1.0000E+00	5.355?E-01	4.3141E+04	1.?690E-03	5.A169E-04	2.2194E-02	3
9.0000E-03	4.1250E-01	5.2545E-02	1.0000E+00	5.5794E-01	4.4948E+04	2.1715E-03	7.?34AE-04	2.496AE-02	4
1.0000E-02	4.446BE-01	5.A38?E-02	1.0000E+00	4.346?E-01	?.5013E+04	2.A045E-03	9.A989E-04	2.7742E-02	5
1.2000E-02	4.853?E-01	7.0067E-02	1.0000E+00	2.6839E-01	2.1622E+04	3.5411E-03	1.?457E-03	3.3291E-02	6
1.4000E-02	5.1109E-01	A.173AE-02	1.0000E+00	1.779AE-01	1.433AE+04	4.5436E-03	1.A43?E-03	3.9839E-02	7
1.8000E-02	5.4221E-01	1.0509E-01	1.0000E+00	1.1007E-01	9.5117E+03	5.A822E-03	2.?704E-03	4.9936E-02	8
2.3000E-02	5.7046E-01	1.3429E-01	1.0000E+00	8.341?E-02	6.719AE+03	9.?176E-03	4.?472E-03	6.3808E-02	9
2.7000E-02	5.A45?E-01	1.?76?E-01	1.0000E+00	6.8017E-02	?.5439E+03	1.1A83E-02	9.?12AE-03	7.4904E-02	10
3.2000E-02	A.035AE-01	1.A68?E-01	1.0000E+00	5.705AE-02	4.5965E+03	1.4044E-02	7.?342E-03	8.8776E-02	11
4.2000E-02	A.3411E-01	2.452?E-01	1.0000E+00	4.6384E-02	3.73A7E+03	2.?748E-02	1.?691E-02	1.1652E-01	12
5.2000E-02	6.5507E-01	3.0359E-01	1.0000E+00	3.9224E-02	?.1590E+03	2.A092E-02	1.A03AE-02	1.4426E-01	13
7.2000E-02	6.976AE-01	4.203AE-01	1.0000E+00	3.4337E-02	2.7662E+03	4.?470E-02	2.?78AE-02	1.9975E-01	14
9.2000E-02	7.3145E-01	5.371?E-01	1.0000E+00	2.939AE-02	2.3681E+03	5.7929E-02	3.A827E-02	2.5523E-01	15
1.1200E-01	7.6211E-01	A.5389E-01	1.0000E+00	2.660?E-02	2.14?1E+03	7.4402E-02	4.9144E-02	3.1071E-01	16
1.3200E-01	7.9122?-01	7.706AE-01	1.0000E+00	2.410?E-02	1.9419E+03	9.?A28E-02	6.?679E-02	3.6620E-01	17
1.5200E-01	A.1509E-01	A.A742E-01	1.0000E+00	2.197?E-02	1.7702E+03	1.1017E-01	7.?415E-02	4.216AE-01	18
1.7200E-01	A.397?E-01	1.004?E+00	1.0000E+00	2.1010E-02	1.693?E+03	1.?941E-01	9.?34?E-02	4.7717E-01	19
1.9200E-01	8.622AE-01	1.1210E+00	1.0000E+00	1.863AE-02	1.500AE+03	1.4952E-01	1.1045E-01	5.3265E-01	20
2.1700E-01	A.A811E-01	1.2960E+00	1.0000E+00	2.130AE-02	1.7166E+03	1.?584E-01	1.?344E-01	6.0201E-01	21
2.4200E-01	9.148AE-01	1.4129E+00	1.0000E+00	2.008?E-02	1.617AE+03	2.A368E-01	1.A86AE-01	6.7137E-01	22
2.6700E-01	9.4970E-01	1.55A8E+00	1.0000E+00	1.5112E-02	1.2175E+03	2.?289E-01	1.A59AE-01	7.4072E-01	23
2.9200E-01	9.5484E-01	1.704AE+00	1.0000E+00	8.3092E-03	6.6939E+02	2.A332E-01	2.1484E-01	8.1008E-01	24
3.1700E-01	9.723?E-01	1.A507E+00	1.0000E+00	1.062AE-02	A.562AE+02	2.0479E-01	2.A522E-01	8.7943E-01	25
3.4200E-01	9.A457?-01	1.0967E+00	1.0000E+00	7.061AE-03	5.689?E+02	3.?732E-01	2.?705E-01	9.4879E-01	26
3.6700E-01	9.9?97E-01	2.142?E+00	1.0000E+00	4.163?E-03	3.354AE+02	3.A079E-01	3.101?E-01	1.0181E+00	27
3.9200E-01	9.9641E-01	2.288AE+00	1.0000E+00	2.255?E-03	1.849AE+02	3.?507E-01	3.A42?E-01	1.0875E+00	28
4.1700E-01	9.9834E-01	2.434AE+00	1.0000E+00	1.125?E-03	9.0642E+01	4.?A09E-01	3.?91?E-01	1.1569E+00	29
4.4200E-01	9.995?E-01	2.580?E+00	1.0000E+00	5.650AE-04	4.5845E+01	4.A590E-01	4.1481E-01	1.2262E+00	30
4.670?E-01	1.0000E+00	2.726?E+00	1.0000E+00	1.453AE-04	1.1712E+01	5.?215E-01	4.?11AE-01	1.295AE+00	31

A= .6702/10AE-02 B= .7548208AE+01 CF/2= .95552668E-03 THETA AL= .3n981A23E-01 X= 6.00

Y/DEL A*	Y/DEL A	V*	V**	UTAL*	U*	U**	1-U	(1-U)*	
0	0	0	0	3.8244E-00	0	0	3.1693E-01	3.1693E-01	1
9.4442E-02	2.1324E-02	7.4981E+01	7.4981E+00	3.8244E+00	1.0730E+01	1.0730E+01	2.0964E-01	2.0964E-01	2
1.1543E-01	2.6063E-02	9.3965E+01	9.3965E+00	3.8244E+00	1.1177E+01	1.1177E+01	2.0514E-01	2.0514E-01	3
1.3642E-01	3.0801E-02	1.1105E+02	1.1105E+01	3.8244E+00	1.1944E+01	1.1964E+01	1.9729E-01	1.9729E-01	4
1.5740E-01	3.5540E-02	1.2813E+02	1.2813E+01	3.8244E+00	1.3189E+01	1.3199E+01	1.8504E-01	1.8504E-01	5
1.9938E-01	4.5017E-02	1.6230E+02	1.6230E+01	3.8244E+00	1.4715E+01	1.4715E+01	1.6979E-01	1.5979E-01	6
2.4135E-01	5.4495E-02	1.9647E+02	1.9647E+01	3.8244E+00	1.5682E+01	1.5682E+01	1.5011E-01	1.5011E-01	7
3.2531E-01	7.3449E-02	2.6481E+02	2.6481E+01	3.8244E+00	1.6836E+01	1.6886E+01	1.4807E-01	1.4807E-01	8
4.3024E-01	9.7143E-02	3.5023E+02	3.5023E+01	3.8244E+00	1.7815E+01	1.7815E+01	1.3870E-01	1.3870E-01	9
5.1419E-01	1.1610E-01	4.1857E+02	4.1857E+01	3.8244E+00	1.8433E+01	1.8433E+01	1.3260E-01	1.3260E-01	10
6.1912E-01	1.3979E-01	5.0400E+02	5.0400E+01	3.8244E+00	1.9154E+01	1.9154E+01	1.2538E-01	1.2538E-01	11
8.2895E-01	1.8718E-01	6.7484E+02	6.7484E+01	3.8244E+00	2.0436E+01	2.0436E+01	1.1257E-01	1.1257E-01	12
1.0386E+00	2.3456E-01	8.4569E+02	8.4569E+01	3.8244E+00	2.1420E+01	2.1420E+01	1.0273E-01	1.0273E-01	13
1.4584E+00	3.2934E-01	1.1874E+03	1.1874E+02	3.8244E+00	2.3263E+01	2.3263E+01	8.4309E-02	8.4309E-02	14
1.8784E+00	4.2411E-01	1.5291E+03	1.5291E+02	3.8244E+00	2.4976E+01	2.4976E+01	6.7173E-02	6.7173E-02	15
2.2981E+00	5.188A E-01	1.8708E+03	1.8708E+02	3.8244E+00	2.5971E+01	2.5971E+01	5.7222E-02	5.7222E-02	16
2.7178E+00	6.1366E-01	2.2125E+03	2.2125E+02	3.8244E+00	2.7418E+01	2.7418E+01	4.8757E-02	4.8757E-02	17
3.1376E+00	7.0843E-01	2.5542E+03	2.5542E+02	3.8244E+00	2.9123E+01	2.9123E+01	2.9700E-02	2.9700E-02	18
3.5573E+00	8.0321E-01	2.8958E+03	2.8958E+02	3.8244E+00	3.0200E+01	3.0200E+01	1.4935E-02	1.4935E-02	19
3.9771E+00	8.979A E-01	3.2375E+03	3.2375E+02	3.8244E+00	3.1010E+01	3.1010E+01	6.834AE-03	6.834AE-03	20
4.5014E+00	1.0164E+00	3.6647E+03	3.6647E+02	3.8244E+00	3.1515E+01	3.1515E+01	1.772AE-03	1.772AE-03	21
5.0264E+00	1.1349E+00	4.0918E+03	4.0918E+02	3.8244E+00	3.1627E+01	3.1627E+01	6.4355E-04	6.4355E-04	22
5.5511E+00	1.2534E+00	4.5189E+03	4.5189E+02	3.8244E+00	3.1684E+01	3.1684E+01	8.8393E-05	8.8393E-05	23
6.075AE+00	1.371AE+00	4.9460E+03	4.9460E+02	3.8244E+00	3.1693E+01	3.1693E+01	0	0	24
6.6005E+00	1.4903E+00	5.3731E+03	5.3731E+02	3.8244E+00	3.1702E+01	3.1702E+01	-8.936AE-05	-8.9368E-05	25

Y	D2U/DY2	U*Y*	N2U*Y*	EM/NU-S	EM/NU-0	ET/MU-MOM	
0	3.9975E+08	0	0	0	3.8866E+00	0	1
4.5000E-03	1.3708E+08	8.2490E-01	9.8006E-01	6.1224E-01	1.3515E+02	3.5787E+02	2
9.5000E-03	7.8704E+07	1.0503E+02	1.2478E+00	8.8659E-01	5.2111E+02	5.7910E+02	3
6.5000E-03	5.1800E+07	1.3286E+02	1.5785E+00	1.2520E+00	3.0840E+03	1.1070E+03	4
7.5000E-03	-8.6263E+07	1.6900E+02	2.0078E+00	1.7382E+00	7.7478E+02	1.7065E+03	5
9.5000E-03	-7.4948E+07	2.3883E+02	2.8375E+00	2.6717E+00	2.52A4E+02	1.7141E+03	6
1.1500E-02	-3.5136E+07	3.0812E+02	3.6607E+00	3.5664E+00	3.0320E+02	1.2746E+03	7
1.5500E-02	-1.2960E+07	4.4717E+02	5.3124E+00	5.2867E+00	6.2214E+02	1.4661E+03	8
2.0500E-02	-5.2253E+06	6.2393E+02	7.4129E+00	7.4085E+00	1.3670E+03	1.8193E+03	9
2.4500E-02	-2.3138E+06	7.7155E+02	9.1664E+00	9.1654E+00	5.1156E+03	2.7437E+03	10
2.9500E-02	-1.7980E+06	8.6544E+02	1.1470E+01	1.1470E+01	5.4632E+03	2.0356E+03	11
3.9500E-02	-8.2188E+05	1.3791E+03	1.6385E+01	1.6389E+01	1.5332E+04	4.4054E+03	12
4.9500E-02	-4.9955E+05	1.8115E+03	2.1522E+01	2.1529E+01	3.3947E+04	6.4702E+03	13
6.9500E-02	-4.4376E+05	2.7622E+03	3.2818E+01	3.2818E+01	2.2981E+04	1.0349E+04	14
8.9500E-02	-2.1257E+05	3.8190E+03	4.5374E+01	4.5374E+01	5.9410E+04	1.4421E+04	15
1.0950E-01	6.2282E+04	4.8584E+03	5.7725E+01	5.7725E+01	6.2679E+05	2.0885E+04	16
1.2950E-01	-1.5059E+04	6.1103E+03	7.2594E+01	7.2594E+01	1.6513E+07	3.3719E+04	17
1.4950E-01	-4.2978E+05	7.4384E+03	8.8377E+01	8.8377E+01	1.1483E+04	3.7204E+04	18
1.6950E-01	-4.9066E+05	8.7454E+03	1.0390E+02	1.0390E+02	3.2634E+03	3.4342E+04	19
1.8950E-01	-4.3518E+05	1.0044E+04	1.1928E+02	1.1928E+02	9.9178E+02	2.4636E+04	20
2.1450E-01	-2.8378E+05	1.1550E+04	1.3722E+02	1.3722E+02	1.7262E+02	1.4330E+04	21
2.3950E-01	-1.2562E+05	1.2941E+04	1.5375E+02	1.5375E+02	1.6150E+01	4.7108E+03	22
2.6450E-01	-3.2142E+04	1.4314E+04	1.7011E+02	1.7011E+02	1.8953E+01	2.4426E+03	23
2.8950E-01	-1.5458E+04	1.5674E+04	1.8624E+02	1.8624E+02	6.6104E+01	5.8684E+02	24
3.1450E-01	-3.2542E+03	1.7034E+04	2.0238E+02	2.0238E+02	2.5544E+03	3.8471E+01	25

RUN NO. A= 9 M= 60(HM/SQFT-HR X= 6.001NCHES REYNOLDS NUMBER = 4.1152E+05

FREE STREAM PROPERTIES PS=?.937n PT=?.588n T=112.12 UINF= 191.2n7 FT/SE- RHO= .n665432 LBM/CUBICFT

THETA= .?1043E-01 DELTA*= .4764AE-01 DELTA= .21103E+00

Y INCHES	U/UINF		T/TINF	MU*DU/DY	DU/DY	ALPHA	BETA	Y/DELTA	
0	0	0	1.0000E+00	2.4529E-01	1.9755E+04	0	0	0	1
5.500rE-03	3.5266F-01	?.205?E+0?	1.0000E+00	3.9219F-01	3.15?0E+04	9.7?49E-04	2.?863E-04	2.1324E-02	?
6.500rE-03	3.7749E-01	?.?884E+0?	1.0000E+00	4.247?E-01	?.421?E+04	1.??46E-03	?.07?3E-04	2.?063E-02	?
7.500rE-03	4.1614E-01	4.?71?E+0?	1.0000E+00	5.813?E-01	4.?833E+04	1.5965E-03	?.?523E-04	3.?801E-02	4
9.500rE-03	4.642?E-01	5.537nE+0?	1.0000E+00	5.153?E-01	4.151?E+04	1.?085E-03	?.?646E-04	3.5540E-02	5
1.150nE-02	4.9481?-01	4.7024E+02	1.0000E+00	3.230?E-01	2.6?2?E+04	2.?P18E-03	1.?86nE-03	4.5017E-02	?
1.550rE-02	5.3281E-01	9.?34nE+0?	1.0000E+00	2.?71?E-01	1.6?87E+04	3.?441E-03	1.5463E-03	5.4?P?E-02	7
2.050rE-02	5.6210E-01	1.194?E+0?	1.0000E-00	1.354?E-01	1.0911E+04	5.?217E-03	?.?136E-03	7.3440E-02	?
2.450rE-02	5.?16nE-01	1.428nE+0?	1.0000E+00	9.605?E-02	7.?30?E+03	?.?042E-03	4.?359E-03	9.?145E-02	9
2.950rE-02	6.044?E-01	1.7194E+03	1.0000E+00	7.4047E-02	?.?9?3E+03	1.?042E-02	5.?72?E-03	1.1410E-01	10
3.950rE-02	?.4481E-01	?.3022E+03	1.0000E+00	?.?64?E-02	?.?97?E+03	1.?089E-02	7.?822E-03	1.3074E-01	11
4.950rE-02	6.7585E-01	?.?85?E+0?	1.0000E+00	5.859?E-02	4.?2?5E+03	?.?543E-02	1.?313E-02	1.?714E-01	12
6.950rE-02	7.3400?-01	4.?507E+03	1.0000E+00	4.?53?E-02	3.?29?E+03	?.?427E-02	1.?854E-02	?.3456E-01	13
8.950rE-02	7.?P?5E-01	5.?164E+03	1.0000E+00	3.954?E-02	3.?1?3E+03	4.?43?E-02	?.?502E-02	3.?P14E-01	14
1.095rE-01	?.1945E-01	?.?P2?E+03	1.0000E+00	?.?647E-02	?.?13?E+03	5.?799E-02	?.?917E-02	4.?411E-01	15
1.295rE-01	?.7140E-01	7.5479E+03	1.0000E+00	4.4619E-02	?.594?E+03	7.?453E-02	5.?08?E-02	5.1?P?E-01	1?
1.495rE-01	9.1891E-01	?.7134E+03	1.0000E+00	?.?934E-02	?.?75?E+03	9.5457E-02	?.?22?E-02	6.1?4?E-01	17
1.695rE-01	9.528?E-01	?.?791E+03	1.0000E+00	?.?52?E-02	?.13?5E+03	1.?588E-01	?.?554E-02	7.?P45E-01	1?
1.895rE-01	9.784?E-01	1.1045E+04	1.0000E+00	1.645?E-02	1.?2?5E+03	1.?761E-01	1.?793E-01	?.?321E-01	19
2.145rE-01	9.944?E-01	1.?502E+04	1.0000E+00	6.910?E-03	5.5?72E+02	1.?P03E-01	1.?997E-01	?.?7?5E-01	?n
2.395rE-01	9.979?E-01	1.?959E+04	1.0000E+00	1.?22?E-03	1.4?P?E+02	2.?P57E-01	1.?P17E-01	1.0164E+00	21
2.645rE-01	9.997?E-01	1.541?E+04	1.0000E+00	7.?46?E-04	?.?47?E+01	?.5183E-01	1.?P5?E-01	1.1?4?E+00	??
2.895rE-01	1.000nE+00	1.?P7?E+04	1.0000E+00	1.553?E-04	1.?91?E+01	?.?P75E-01	?.?08nE-01	1.?934E+00	?3
3.145rE-01	1.000?E+00	1.?33nE+04	1.0000E+00	?.?29?E-05	?.952?E+00	3.1?31E-01	?.?52?E-01	1.4903E+00	?5

A= .67[illegible]E-02 B= .7544208E+01 CF/2= .6925150E-03 THETA ALE .4263100E-01 X=10.00

Y/DEL A*	Y/DEL A	Y*	V**	U/AU*	U*	U**	1-U	(1-U)*	
			0	3.2060E+00		0	1.0000E+01	3.8800E+01	1
7.8656E-02	1.7727E-02	7.1497E-01	7.1498E+00	3.2060E+00	1.3047E+01	1.3097E+01	2.4903E+01	2.4903E+01	2
9.4396E-02	2.1273E-02	8.5794E-01	8.5794E+00	3.2060E+00	1.5656E+01	1.5703E+01	2.4062E+01	2.4062E+01	3
1.1013E-01	2.4818E-02	1.0010E+00	1.0010E+01	3.2060E+00	1.8265E+01	1.8325E+01	2.3175E+01	2.3175E+01	4
1.2587E-01	2.8364E-02	1.1440E+00	1.1440E+01	3.2060E+00	2.0874E+01	2.0959E+01	2.2401E+01	2.2401E+01	5
1.4160E-01	3.1910E-02	1.2870E+00	1.2870E+01	3.2060E+00	2.3483E+01	2.3629E+01	2.0971E+01	2.0971E+01	6
1.5733E-01	3.5455E-02	1.4300E+00	1.4300E+01	3.2060E+00	2.6092E+01	2.6274E+01	1.9826E+01	1.9826E+01	7
1.7307E-01	3.9001E-02	1.5730E+00	1.5730E+01	3.2060E+00	2.8701E+01	2.8913E+01	1.8513E+01	1.8513E+01	8
1.8880E-01	4.2546E-02	1.7160E+00	1.7160E+01	3.2060E+00	3.1310E+01	3.1552E+01	1.7399E+01	1.7399E+01	9
2.0453E-01	4.6092E-02	1.8590E+00	1.8590E+01	3.2060E+00	3.3919E+01	3.4191E+01	1.6075E+01	1.6075E+01	10
2.2027E-01	4.9637E-02	2.0020E+00	2.0020E+01	3.2060E+00	3.6528E+01	3.6830E+01	1.4743E+01	1.4743E+01	11
2.3600E-01	5.3182E-02	2.1450E+00	2.1450E+01	3.2060E+00	3.9137E+01	3.9469E+01	1.3381E+01	1.3381E+01	12
2.5173E-01	5.6728E-02	2.2880E+00	2.2880E+01	3.2060E+00	4.1746E+01	4.2108E+01	1.1939E+01	1.1939E+01	13
2.6747E-01	6.0273E-02	2.4310E+00	2.4310E+01	3.2060E+00	4.4355E+01	4.4747E+01	1.0505E+01	1.0505E+01	14
2.8320E-01	6.3819E-02	2.5740E+00	2.5740E+01	3.2060E+00	4.6964E+01	4.7386E+01	9.0134E+00	9.0134E+00	15
2.9893E-01	6.7364E-02	2.7169E+00	2.7169E+01	3.2060E+00	4.9573E+01	5.0025E+01	7.6847E+00	7.6847E+00	16
3.1467E-01	7.0910E-02	2.8599E+00	2.8599E+01	3.2060E+00	5.2182E+01	5.2664E+01	6.4627E+00	6.4627E+00	17
3.3040E-01	7.4455E-02	3.0029E+00	3.0029E+01	3.2060E+00	5.4791E+01	5.5303E+01	5.1737E+00	5.1737E+00	18
3.4613E-01	7.8001E-02	3.1459E+00	3.1459E+01	3.2060E+00	5.7400E+01	5.7942E+01	3.9655E+00	3.9655E+00	19
3.6187E-01	8.1546E-02	3.2889E+00	3.2889E+01	3.2060E+00	6.0009E+01	6.0581E+01	2.7527E+00	2.7527E+00	20
3.7760E-01	8.5092E-02	3.4319E+00	3.4319E+01	3.2060E+00	6.2618E+01	6.3220E+01	1.6303E+00	1.6303E+00	21
3.9333E-01	8.8637E-02	3.5749E+00	3.5749E+01	3.2060E+00	6.5227E+01	6.5859E+01	0	0	22
4.0907E-01	9.2183E-02	3.7179E+00	3.7179E+01	3.2060E+00	6.7836E+01	6.8498E+01	0	0	23
4.2480E-01	9.5728E-02	3.8609E+00	3.8609E+01	3.2060E+00	7.0445E+01	7.1137E+01	0	0	24
4.4053E-01	9.9273E-02	4.0039E+00	4.0039E+01	3.2060E+00	7.3054E+01	7.3776E+01	0	0	25
4.5627E-01	1.0282E-01	4.1469E+00	4.1469E+01	3.2060E+00	7.5663E+01	7.6415E+01	0	0	26
4.7200E-01	1.0637E-01	4.2899E+00	4.2899E+01	3.2060E+00	7.8272E+01	7.9054E+01	0	0	27
4.8773E-01	1.0991E-01	4.4329E+00	4.4329E+01	3.2060E+00	8.0881E+01	8.1693E+01	0	0	28
5.0347E-01	1.1346E-01	4.5759E+00	4.5759E+01	3.2060E+00	8.3490E+01	8.4332E+01	0	0	29
5.1920E-01	1.1701E-01	4.7189E+00	4.7189E+01	3.2060E+00	8.6099E+01	8.6971E+01	0	0	30
5.3493E-01	1.2055E-01	4.8619E+00	4.8619E+01	3.2060E+00	8.8708E+01	8.9610E+01	0	0	31
5.5067E-01	1.2410E-01	5.0049E+00	5.0049E+01	3.2060E+00	9.1317E+01	9.2249E+01	0	0	32
5.6640E-01	1.2764E-01	5.1479E+00	5.1479E+01	3.2060E+00	9.3926E+01	9.4888E+01	0	0	33
5.8213E-01	1.3119E-01	5.2909E+00	5.2909E+01	3.2060E+00	9.6535E+01	9.7527E+01	0	0	34
5.9787E-01	1.3473E-01	5.4339E+00	5.4339E+01	3.2060E+00	9.9144E+01	1.0017E+02	0	0	35
6.1360E-01	1.3828E-01	5.5769E+00	5.5769E+01	3.2060E+00	1.0175E+02	1.0281E+02	0	0	36
6.2933E-01	1.4182E-01	5.7199E+00	5.7199E+01	3.2060E+00	1.0436E+02	1.0545E+02	0	0	37

Y	D2U/DY2	U*Y*	N2U*Y*	EM/NU-S	EM/NU-O	ET/MU-MOM	
	3.6702 +07		0	0	5.1747E+03	0	
5.0000E-03	-4.7721E+06	9.3644E-01	1.1125E+00	7.4689E-01	7.5327E+04	4.8954E+02	2
6.0000E-03	-1.5467E+07	1.1245E+00	1.4208E+00	1.0774E+00	1.2275E+04	5.4777E+02	3
7.0000E-03	-1.8391E+07	1.4846E+00	1.7631E+00	1.4607E+00	7.9180E+03	9.8142E+02	4
8.0000E-03	-1.6428E+07	1.7845E+00	2.1201E+00	1.8659E+00	1.6546E+03	1.4775E+03	5
1.0000E-02	-4.1723E+07	2.4351E+00	2.8032E+00	2.7329E+00	5.4104E+02	1.9698E+03	6
1.2000E-02	-2.7857E+07	3.1184E+00	3.7052E+00	3.8144E+00	4.2749E+02	1.9918E+03	7
1.4000E-02	-1.2780E+07	4.4584E+00	5.2072E+00	5.2701E+00	5.6435E+02	1.5004E+03	8
2.1000E-02	-5.9254E+06	6.1865E+00	7.3502E+00	7.3454E+00	8.3279E+02	1.7699E+03	9
2.5000E-02	-3.0878E+06	7.5964E+00	9.0256E+00	9.0244E+00	1.7573E+03	2.0716E+03	10
3.0000E-02	-1.3934E+06	9.4053E+00	1.1174E+01	1.1174E+01	4.9214E+03	2.4739E+03	11
4.0000E-02	-5.8491E+05	1.3303E+01	1.5805E+01	1.5804E+01	2.0303E+04	3.0635E+03	12
5.0000E-02	-4.1475E+05	1.7295E+01	2.0542E+01	2.0542E+01	2.8161E+04	5.4794E+03	13
7.0000E-02	-2.8344E+05	2.4257E+01	3.1196E+01	3.1194E+01	4.1659E+04	9.4947E+03	14
9.0000E-02	-2.2537E+05	3.1801E+01	4.2536E+01	4.2534E+01	3.9922E+04	1.2780E+04	15
1.1000E-01	-1.8075E+05	4.0011E+01	5.4666E+01	5.4664E+01	1.4349E+05	1.8557E+04	16
1.3000E-01	-9.5254E+04	5.7049E+01	6.7788E+01	6.7786E+01	1.5710E+05	2.4637E+04	17
1.5000E-01	-1.0478E+05	8.8531E+01	8.1421E+01	8.1421E+01	1.0322E+05	3.0386E+04	18
1.7000E-01	-1.0054E+05	8.0675E+01	9.5850E+01	9.5850E+01	9.2557E+04	3.6405E+04	19
1.9000E-01	-1.2595E+05	9.3231E+01	1.1077E+02	1.1077E+02	4.5749E+04	4.2027E+04	20
2.1500E-01	-1.6937E+05	1.0924E+02	1.2981E+02	1.2981E+02	1.5738E+04	4.5935E+04	21
2.4000E-01	-2.1447E+05	1.2570E+02	1.4934E+02	1.4934E+02	6.5844E+03	4.4404E+04	22
2.6500E-01	-2.2116E+05	1.4151E+02	1.6813E+02	1.6813E+02	1.0427E+04	3.7729E+04	23
2.9000E-01	-1.6604E+05	1.5451E+02	1.8358E+02	1.8358E+02	2.8599E+03	2.1682E+04	24
3.1000E-01	-1.1502E+05	1.6417E+02	1.9508E+02	1.9508E+02	4.9403E+01	1.0803E+04	25
3.4000E-01	-4.1187E+04	1.8475E+02	2.1950E+02	2.1550E+02	3.3048E+00	4.8988E+03	26
3.6000E-01	-1.0284E+04	1.9834E+02	2.3564E+02	2.3564E+02	5.0690E+00	6.7074E+04	27

RUN NO. A= 10 M= 6.0LBM/SQFT-HR X=10.001NCHES REYNOLDS NUMBER = 6.3033E+05

FREE STREAM PROPERTIES PS=4.1010 PT=3.6200 T=113.07 UINF= 121.864 FT/SEC RHO= .0664104 LBM/CUBICFT

THETA= .42273E-01 DELTA*= .6356DE-01 DELTA= .282A5E+00 UTAU=

Y INCHES	U/UINF	R	T/TINF	MU*DU/DY	DU/DY	ALPHA	BETA	Y/DELTA	
0	0	0	1.0000E+00	5.4909E-01	4.4229E+04	0	0	0	1
5.0000E-03	3.4465E-01	2.9309E+02	1.0000E+00	4.344AE-01	3.5002E+04	9.9331E-04	3.1643E-04	1.7727E-02	2
6.0000E-03	3.667AE-01	3.5160E+02	1.0000E+00	4.1157E-01	3.3154E+04	1.3514E-03	4.4394E-04	2.1273E-02	3
7.0000E-03	3.9014E-01	4.1020E+02	1.0000E+00	3.9619E-01	3.2153E+04	1.7326E-03	5.8845E-04	2.4818E-02	4
8.0000E-03	4.1050E-01	4.6880E+02	1.0000E+00	3.7356E-01	3.0094E+04	2.1360E-03	7.5025E-04	2.8364E-02	5
1.0000E-02	4.4814E-01	5.8600E+02	1.0000E+00	2.8173E-01	2.2697E+04	3.0047E-03	1.1255E-03	3.5455E-02	6
1.2000E-02	4.782AE-01	7.032DE+02	1.0000E+00	1.9604E-01	1.6035E+04	3.9370E-03	1.4557E-03	4.2546E-02	7
1.6000E-02	5.1282E-01	9.3759E+02	1.0000E+00	1.3004E-01	1.0476E+04	5.9424E-03	2.2507E-03	5.6728E-02	8
2.1000E-02	5.4215E-01	1.2304E+03	1.0000E+00	8.8544E-02	7.1332E+03	8.4276E-03	3.9681E-03	7.4439E-02	9
2.5000E-02	5.5920E-01	1.465DE+03	1.0000E+00	7.3544E-02	5.9248E+03	1.0A76E-02	5.2039E-03	8.8637E-02	10
3.0000E-02	5.7695E-01	1.758DE+03	1.0000E+00	6.099AE-02	4.9134E+03	1.3797E-02	6.8663E-03	1.0633E-01	11
4.0000E-02	6.1203E-01	2.344DE+03	1.0000E+00	5.4566E-02	4.4279E+03	1.9039E-02	1.0513E-02	1.4189E-01	12
5.0000E-02	6.3637E-01	2.930DE+03	1.0000E+00	4.8631E-02	3.9177E+03	2.4462E-02	1.4589E-02	1.7727E-01	13
7.0000E-02	6.9030E-01	4.102DE+03	1.0000E+00	4.2599E-02	3.4634E+03	4.0547E-02	2.3950E-02	2.4818E-01	14
9.0000E-02	7.3206E-01	5.274DE+03	1.0000E+00	3.6379E-02	2.9306E+03	5.5A95E-02	3.4871E-02	3.1908E-01	15
1.1000E-01	7.6977E-01	6.446DE+03	1.0000E+00	3.4028E-02	2.7413E+03	7.2425E-02	4.7297E-02	3.8998E-01	16
1.3000E-01	8.0760E-01	7.618DE+03	1.0000E+00	3.2344E-02	2.6058E+03	9.0097E-02	6.1242E-02	4.6089E-01	17
1.5000E-01	8.4078E-01	8.7899E+03	1.0000E+00	2.956BE-02	2.4140E+03	1.0A89E-01	7.A741E-02	5.3187E-01	18
1.7000E-01	8.7337E-01	9.9619E+03	1.0000E+00	2.8104E-02	2.2641E+03	1.2A79E-01	9.3813E-02	6.0276E-01	19
1.900DE-01	9.0303E-01	1.1134E+04	1.0000E+00	2.5831E-02	2.0809E+03	1.4976E-01	1.1244E-01	6.7364E-01	20
2.150DE-01	9.3519E-01	1.2599E+04	1.0000E+00	2.2040E-02	1.7763E+03	1.7742E-01	1.3792E-01	7.6228E-01	21
2.400DE-01	9.6385E-01	1.4064E+04	1.0000E+00	1.710BE-02	1.3780E+03	2.0A60E-01	1.6566E-01	8.5091E-01	22
2.650DE-01	9.8272E-01	1.5529E+04	1.0000E+00	1.0657E-02	8.5851E+02	2.3709E-01	1.9536E-01	9.3955E-01	23
2.900DE-01	9.9335E-01	1.6994E+04	1.0000E+00	5.7204E-03	4.6084E+02	2.6A85E-01	2.2655E-01	1.0282E+00	24
3.100DE-01	9.9834E-01	1.8164E+04	1.0000E+00	2.4642E-03	2.0094E+02	2.9454E-01	2.5232E-01	1.0991E+00	25
3.400DE-01	1.0000E+00	1.9924E+04	1.0000E+00	5.1627E-04	4.1591E+01	3.3424E-01	2.9190E-01	1.2059E+00	26
3.650DE-01	1.0000E+00	2.1389E+04	1.0000E+00	1.1321E-11	9.1201E-06	3.6A05E-01	3.2570E-01	1.2941E+00	27

THE MAX SHEAR AT POINT 12 IS CF/CFM = 3.01075E+00

	Y/DELTA	(UMAX-U)/UTMAX	EPST/UTMAX*DELTA	Y*MAX	U*MAX	CF/2
1	0	2.4399E+01	0	0	0	5.5794E-04
2	1.7727E-02	1.5990E+01	4.0884E-03	1.1136E+01	8.4091E+00	1.2659E-03
3	2.1273E-02	1.5450E+01	4.4717E-03	1.3343E+01	8.9461E+00	1.3111E-03
4	2.4818E-02	1.4880E+01	4.7781E-03	1.5590E+01	9.5198E+00	1.3586E-03
5	2.8364E-02	1.4383E+01	5.2562E-03	1.7817E+01	1.0314E+01	1.3988E-03
6	3.5455E-02	1.3465E+01	7.3357E-03	2.2271E+01	1.0934E+01	1.4718E-03
7	4.2546E-02	1.2730E+01	1.0733E-02	2.6725E+01	1.1660E+01	1.5281E-03
8	5.6728E-02	1.1887E+01	1.7116E-02	3.5634E+01	1.2513E+01	1.5857E-03
9	7.4495E-02	1.1171E+01	2.5784E-02	4.6770E+01	1.3278E+01	1.6245E-03
10	8.8637E-02	1.0795E+01	3.1376E-02	5.5878E+01	1.3844E+01	1.6439E-03
11	1.0636E-01	1.0322E+01	3.8179E-02	6.6814E+01	1.4077E+01	1.6504E-03
12	1.4182E-01	9.4659E+00	4.2900E-02	8.9085E+01	1.4333E+01	1.6708E-03
13	1.7727E-01	8.8720E+00	4.6147E-02	1.1136E+02	1.4537E+01	1.6661E-03
14	2.4818E-01	7.5562E+00	5.3503E-02	1.5590E+02	1.4844E+01	1.6387E-03
15	3.1909E-01	6.5374E+00	6.8688E-02	2.0044E+02	1.5081E+01	1.5733E-03
16	3.9000E-01	5.6174E+00	8.1183E-02	2.4498E+02	1.4781E+01	1.4632E-03
17	4.6091E-01	4.8944E+00	9.0343E-02	2.8953E+02	1.4704E+01	1.3678E-03
18	5.3182E-01	3.8848E+00	9.6464E-02	3.3407E+02	2.0514E+01	1.2054E-03
19	6.0273E-01	3.0906E+00	9.9808E-02	3.7861E+02	2.1304E+01	1.0173E-03
20	6.7364E-01	2.3659E+00	4.4075E-02	4.2315E+02	2.2037E+01	8.1108E-04
21	7.6248E-01	1.5812E+00	3.7751E-02	4.7883E+02	2.2816E+01	5.9362E-04
22	8.5091E-01	8.8203E-01	3.4751E-02	5.3451E+02	2.3517E+01	4.2306E-04
23	9.3955E-01	4.2152E-01	3.6839E-02	5.9019E+02	2.3977E+01	2.7968E-04
24	1.0282E+00	1.4230E-01	4.3439E-02	6.4586E+02	2.4254E+01	1.7701E-04
25	1.0991E+00	4.0474E-02	4.8928E-02	6.9041E+02	2.4394E+01	1.1399E-04
26	1.2055E+00	0	1.1822E-01	7.5722E+02	2.4388E+01	4.2965E-05
27	1.2941E+00	0	0	8.1298E+02	2.4388E+01	0

(CFMAX - CFWALL)/2 = 1.1219E-03

(CFMAX - CFWALL)/CFMAX = 6.6786E-01

(CFMAX - CFWALL)/CFWALL = 2.0107E+00

MASS= .[illegible]E+02   X=[illegible] INCHES   F= .2081[illegible]E-02   ZETA= [illegible]

Y INCHES	R*	CF/2	EPSILON T	EPSILON F	[illegible]	[illegible]	F-D/D12	[illegible]	
0	0	5.5794E-04	0	0	[illegible]	0	0	0	1
5.0000E-03	2.7213E+02	1.265[illegible]E-0[illegible]	3.5645E-05	-1.1625E-03	[illegible]	[illegible]	-1.5116E+00	0	2
6.0000E-03	3.2456E+02	1.311[illegible]E-0[illegible]	3.8088E-05	-1.2134E-03	[illegible]	[illegible]	-1.8770E+00	0	3
7.0000E-03	3.6098E+02	1.358[illegible]E-0[illegible]	4.1459E-05	-1.2375E-03	[illegible]	[illegible]	-1.4092E+00	0	4
8.0000E-03	4.3544E+02	1.398[illegible]E-0[illegible]	4.5828E-05	-1.2508E-03	[illegible]	[illegible]	-1.4781E+00	0	5
1.0000E-02	5.4426E+02	1.471[illegible]E-0[illegible]	6.3033E-05	-1.4820E-03	[illegible]	[illegible]	-1.6281E+00	0	6
1.2000E-02	6.5314E+02	1.528[illegible]E-0[illegible]	9.3059E-05	-1.6560E-03	[illegible]	[illegible]	-2.1546E+00	0	7
1.6000E-02	8.7081E+02	1.585[illegible]E-0[illegible]	1.4023E-04	-1.8014E-03	[illegible]	[illegible]	-2.1428E+00	0	8
2.1000E-02	1.1420E+03	1.6265E-0[illegible]	2.2480E-04	-1.8864E-03	[illegible]	[illegible]	-2.4559E+00	0	9
2.5000E-02	1.3606E+03	1.6439E-0[illegible]	2.7356E-04	-1.9194E-03	[illegible]	[illegible]	-2.4967E+00	0	10
3.0000E-02	1.6328E+03	1.6584E-0[illegible]	3.3278E-04	-1.9455E-03	[illegible]	[illegible]	-2.8290E+00	0	11
4.0000E-02	2.1776E+03	1.6799E-0[illegible]	3.7404E-04	-1.9553E-03	[illegible]	[illegible]	-2.8426E+00	0	12
5.0000E-02	2.7213E+03	1.6681E-0[illegible]	4.1979E-04	-1.9658E-03	[illegible]	[illegible]	-2.8563E+00	0	13
7.0000E-02	3.8098E+03	1.638[illegible]E-0[illegible]	4.6648E-04	-1.9700E-03	[illegible]	[illegible]	-2.8630E+00	0	14
9.0000E-02	4.8983E+03	1.572[illegible]E-0[illegible]	5.2895E-04	-1.9804E-03	[illegible]	[illegible]	-2.8749E+00	0	15
1.1000E-01	5.9869E+03	1.4832E-0[illegible]	5.3343E-04	-1.9784E-03	[illegible]	[illegible]	-2.8727E+00	0	16
1.3000E-01	7.0754E+03	1.3670E-0[illegible]	5.1756E-04	-1.9744E-03	[illegible]	[illegible]	-2.8675E+00	0	17
1.5000E-01	8.1630E+03	1.2054E-0[illegible]	4.9230E-04	-1.9723E-03	[illegible]	[illegible]	-2.8648E+00	0	18
1.7000E-01	9.2524E+03	1.0173E-0[illegible]	4.4298E-04	-1.9684E-03	[illegible]	[illegible]	-2.8600E+00	0	19
1.9000E-01	1.0341E+04	8.1108E-04	3.8428E-04	-1.9674E-03	[illegible]	[illegible]	-2.8586E+00	0	20
2.1500E-01	1.1702E+04	5.9362E-04	3.2949E-04	-1.9747E-03	[illegible]	[illegible]	-2.8670E+00	0	21
2.4000E-01	1.3062E+04	4.2396E-04	3.8334E-04	-1.9524E-03	[illegible]	[illegible]	-2.8909E+00	0	22
2.6500E-01	1.4423E+04	2.7968E-04	3.2119E-04	-2.0220E-03	[illegible]	[illegible]	-2.4306E+00	0	23
2.9000E-01	1.5784E+04	1.770[illegible]E-04	3.7870E-04	-2.0496E-03	[illegible]	[illegible]	-2.4648E+00	0	24
3.1000E-01	1.6872E+04	1.1359E-04	5.5735E-04	-2.0671E-03	[illegible]	[illegible]	-2.4880E+00	0	25
3.4000E-01	1.8505E+04	4.296[illegible]E-05	1.0185E-03	-2.0788E-03	[illegible]	[illegible]	-2.7028E+00	0	26
3.6500E-01	1.9865E+04	0	0	-2.0819E-03	[illegible]	[illegible]	-2.7068E+00	0	27

A= .67027108E-02   B=-.23459913E+00   GAMMA CAL= 0

Y/DELTA	ET/[illegible]	EM/NU-0	ET/MU-MOM	E*T/MU	
0	*	5.1747E+03	0	*	1
1.7727E-02	7.[illegible]	7.5327E+04	4.0054E+02	2.[illegible]	2
2.1273E-02	7.[illegible]	1.2275E+04	6.[illegible]	3.[illegible]	3
2.4818E-02	8.[illegible]	7.9180E+03	8.[illegible]	3.[illegible]	4
2.8364E-02	9.[illegible]	1.6546E+03	1.[illegible]	3.[illegible]	5
3.5455E-02	1.[illegible]	5.4108E+02	1.[illegible]	5.[illegible]	6
4.2546E-02	1.[illegible]	4.2709E+02	1.[illegible]	7.[illegible]	7
5.6728E-02	2.[illegible]	5.6635E+02	1.[illegible]	1.[illegible]	8
7.4455E-02	4.[illegible]	8.3279E+02	1.[illegible]	1.[illegible]	9
8.8637E-02	5.[illegible]	1.7573E+03	2.[illegible]	2.[illegible]	10
1.0636E-01	6.[illegible]	4.9214E+03	2.[illegible]	2.[illegible]	11
1.4182E-01	7.[illegible]	2.0303E+04	3.[illegible]	3.[illegible]	12
1.7727E-01	8.[illegible]	2.8161E+04	5.[illegible]	3.[illegible]	13
2.4818E-01	9.[illegible]	4.1658E+04	9.[illegible]	3.[illegible]	14
3.1909E-01	1.[illegible]	3.0922E+04	1.[illegible]	4.[illegible]	15
3.9000E-01	1.[illegible]	1.6348E+05	1.[illegible]	4.[illegible]	16
4.6091E-01	1.[illegible]	1.5710E+05	2.[illegible]	4.[illegible]	17
5.3182E-01	9.[illegible]	1.0322E+05	3.[illegible]	3.[illegible]	18
6.0273E-01	8.[illegible]	9.2553E+04	3.[illegible]	3.[illegible]	19
6.7364E-01	7.[illegible]	4.5759E+04	4.2027E+04	3.[illegible]	20
7.6228E-01	6.[illegible]	1.5739E+04	4.5935E+04	2.[illegible]	21
8.5091E-01	6.[illegible]	4.5844E+03	4.4404E+04	2.[illegible]	22
9.3955E-01	6.[illegible]	1.0427E+0[illegible]	3.3729E+04	2.[illegible]	23
1.0282E+00	7.[illegible]	2.8590E+0[illegible]	2.1482E+04	3.[illegible]	24
1.0991E+00	1.[illegible]	4.9403E+0[illegible]	1.0803E+04	4.[illegible]	25
1.2055E+00	2.[illegible]	3.3049E+0[illegible]	2.6898E+03	6.[illegible]	26
1.2941E+00	*	5.0689E-19	6.7074E-04	*	27

Ax= .8732 * ---02 R= .7544230E+01 RE/2= 49.159215E-03 THETA AL= .5111456E-01 X=14.00

Y/DEL A*	Y/DEL A	V*	V**	U/TAU*	U*	U**	1-U	(1-U)*	
0	0		0	2.7217E+00	0	0	4.4804E+01	4.4804E+01	1
0.0615E-02	1.8277E+02	7.935AE-01	7.9356E+00	2.7217E+00	1.6009E+01	1.6009E+01	2.8795E+01	2.8795E+01	2
0.3015E-02	2.1188E+02	9.1565E-01	9.1565E+00	2.7217E+00	1.7345E+01	1.7345E+01	2.7450E+01	2.7450E+01	3
1.0541E-01	2.3904E+02	1.0377E+01	1.0377E+01	2.7217E+00	1.8374E+01	1.8374E+01	2.6420E+01	2.6420E+01	4
1.1781E-01	2.6712E+02	1.1594E+01	1.1594E+01	2.7217E+00	1.9310E+01	1.9310E+01	2.5494E+01	2.5494E+01	5
1.4201E-01	3.2334E+02	1.4040E+01	1.4040E+01	2.7217E+00	2.0471E+01	2.0471E+01	2.4333E+01	2.4333E+01	6
1.6741E-01	3.7949E+02	1.6482E+01	1.6482E+01	2.7217E+00	2.1210E+01	2.1210E+01	2.3594E+01	2.3594E+01	7
2.1701E-01	4.9274E+02	2.1386E+01	2.1386E+01	2.7217E+00	2.2433E+01	2.2433E+01	2.2371E+01	2.2371E+01	8
2.7931E-01	6.3268E+02	2.7469E+01	2.7469E+01	2.7217E+00	2.3510E+01	2.3510E+01	2.1294E+01	2.1294E+01	9
3.2491E-01	7.4591E+02	3.2353E+01	3.2353E+01	2.7217E+00	2.4292E+01	2.4292E+01	2.0512E+01	2.0512E+01	10
3.9061E-01	8.8571E+02	3.8457E+01	3.8457E+01	2.7217E+00	2.5072E+01	2.5072E+01	1.9732E+01	1.9732E+01	11
5.1461E-01	1.1969E+03	5.0664E+01	5.0664E+01	2.7217E+00	2.6408E+01	2.6408E+01	1.8396E+01	1.8396E+01	12
6.3864E-01	1.4481E+03	6.2874E+01	6.2874E+01	2.7217E+00	2.7539E+01	2.7539E+01	1.7265E+01	1.7265E+01	13
8.6664E-01	2.0104E+03	8.7292E+01	8.7292E+01	2.7217E+00	2.9469E+01	2.9469E+01	1.5335E+01	1.5335E+01	14
1.1341E+00	2.5722E+03	1.1171E+02	1.1171E+02	2.7217E+00	3.1156E+01	3.1156E+01	1.3644E+01	1.3644E+01	15
1.3827E+00	3.1351E+03	1.3611E+02	1.3613E+02	2.7217E+00	3.2706E+01	3.2706E+01	1.2094E+01	1.2094E+01	16
1.6307E+00	3.6975E+03	1.6054E+02	1.6054E+02	2.7217E+00	3.4122E+01	3.4122E+01	1.0682E+01	1.0682E+01	17
1.8787E+00	4.2598E+03	1.8496E+02	1.8496E+02	2.7217E+00	3.5403E+01	3.5403E+01	9.4008E+00	9.4008E+00	18
2.1267E+00	4.8222E+03	2.0938E+02	2.0938E+02	2.7217E+00	3.6632E+01	3.6632E+01	8.1718E+00	8.1718E+00	19
2.3747E+00	5.3844E+03	2.3379E+02	2.3379E+02	2.7217E+00	3.7809E+01	3.7809E+01	6.9952E+00	6.9952E+00	20
2.6227E+00	5.9467E+03	2.5820E+02	2.5820E+02	2.7217E+00	3.8965E+01	3.8965E+01	5.8385E+00	5.8385E+00	21
2.8707E+00	6.5090E+03	2.8261E+02	2.8261E+02	2.7217E+00	4.0031E+01	4.0031E+01	4.7720E+00	4.7720E+00	22
3.1187E+00	7.0713E+03	3.0702E+02	3.0702E+02	2.7217E+00	4.1058E+01	4.1058E+01	3.7461E+00	3.7461E+00	23
3.3667E+00	7.6336E+03	3.3143E+02	3.3143E+02	2.7217E+00	4.2014E+01	4.2014E+01	2.7891E+00	2.7891E+00	24
3.6147E+00	8.1959E+03	3.5584E+02	3.5584E+02	2.7217E+00	4.2891E+01	4.2891E+01	1.9124E+00	1.9124E+00	25
3.8627E+00	8.7582E+03	3.8025E+02	3.8025E+02	2.7217E+00	4.3690E+01	4.3690E+01	1.1124E+00	1.1124E+00	26
4.1107E+00	9.3205E+03	4.0466E+02	4.0466E+02	2.7217E+00	4.4404E+01	4.4404E+01	4.2424E-01	4.2424E-01	27
4.3587E+00	9.8828E+03	4.2907E+02	4.2907E+02	2.7217E+00	4.5033E+01	4.5033E+01	1.7938E-01	1.7938E-01	28
4.6067E+00	1.0445E+04	4.5348E+02	4.5348E+02	2.7217E+00	4.5575E+01	4.5575E+01	1.2907E-01	1.2907E-01	29
4.8546E+00	1.1008E+04	4.7789E+02	4.7789E+02	2.7217E+00	4.6030E+01	4.6030E+01	8.4048E-02	3.5840E-02	30
5.1026E+00	1.1571E+04	5.0230E+02	5.0230E+02	2.7217E+00	4.6397E+01	4.6397E+01	-4.9371E-03	-6.1371E-03	31
5.3506E+00	1.2134E+04	5.2671E+02	5.2671E+02	2.7217E+00	4.6676E+01	4.6676E+01	0	0	32
5.5986E+00	1.2697E+04	5.5112E+02	5.5112E+02	2.7217E+00	4.6867E+01	4.6867E+01			33
5.8466E+00	1.3117E+04	5.6953E+02	5.6953E+02	2.7217E+00	4.6804E+01	4.6804E+01			34

Y	D2U/DY2	U*Y*	S2U*Y*	EM/NU-S	EM/NU-0	EM/NU-MOM	
0	-2.0660E+08	0	0	1.3141E+03	0	0	1
0.9000E-03	-1.1320E+08	1.2704E+02	1.5094E+00	5.9857E+02	1.0787E+03	1.0787E+03	2
7.5000E-03	-9.8918E+07	1.5881E+02	1.8869E+00	1.0000E+00	4.8901E+02	1.2278E+03	3
0.5000E-03	-1.0079E+08	1.9060E+02	2.2656E+00	2.0304E+00	2.3321E+02	1.2473E+03	4
0.5000E-03	-7.4884E+07	2.2239E+02	2.6609E+00	2.4740E+00	1.5007E+02	1.1937E+03	5
1.1500E-02	-3.3618E+07	2.8742E+02	3.4148E+00	3.3824E+00	2.2725E+02	1.0887E+03	6
1.3500E-02	-1.4209E+07	3.4958E+02	4.1534E+00	4.0884E+00	4.0777E+02	1.0976E+03	7
1.7500E-02	-5.8658E+06	4.7927E+02	5.6043E+00	5.6794E+00	1.4391E+03	1.4487E+03	8
2.2500E-02	-3.8595E+06	6.4588E+02	7.6728E+00	7.6409E+00	1.5094E+03	1.8539E+03	9
2.6500E-02	-2.6248E+06	7.8598E+02	9.3378E+00	9.3368E+00	1.9859E+03	2.1751E+03	10
3.1500E-02	-1.4647E+06	9.4429E+02	1.1456E+01	1.1454E+01	3.7364E+03	2.5727E+03	11
4.1500E-02	-7.4728E+05	1.3380E+03	1.5896E+01	1.5896E+01	8.7356E+03	3.7833E+03	12
5.1500E-02	-4.4578E+05	1.7314E+03	2.0572E+01	2.0579E+01	1.5733E+04	5.0238E+03	13
7.1500E-02	-2.2428E+05	2.5724E+03	3.0562E+01	3.0569E+01	4.1100E+04	8.4782E+03	14
9.1500E-02	-1.6403E+05	3.4804E+03	4.1351E+01	4.1354E+01	8.5302E+04	1.2381E+04	15
1.1150E-01	-1.3458E+05	4.4522E+03	5.2896E+01	5.2894E+01	1.6234E+05	1.6762E+04	16
1.3150E-01	-1.0260E+05	5.4780E+03	6.5084E+01	6.5084E+01	2.9983E+05	2.1151E+04	17
1.5150E-01	-3.2956E+04	6.5483E+03	7.7799E+01	7.7798E+01	4.4737E+05	2.4437E+04	18
1.7150E-01	-2.6084E+04	7.6706E+03	9.1127E+01	9.1127E+01	1.1274E+06	5.4878E+04	19
1.9150E-01	-4.9844 E+04	8.8420E+03	1.0530E+02	1.0533E+02	1.1996E+06	3.0733E+04	20
2.1650E-01	-4.0370E+04	1.0431E+04	1.2393E+02	1.2394E+02	1.4687E+06	4.0293E+04	21
2.4150E-01	-8.9485E+04	1.1955E+04	1.4198E+02	1.4198E+02	4.4221E+04	5.5528E+04	22
2.6150E-01	-1.2484E+05	1.3304E+04	1.5815E+02	1.5815E+02	2.2742E+04	4.2428E+04	23
2.9150E-01	-1.8192E+05	1.5523E+04	1.8103E+02	1.8109E+02	2.6491E+03	4.8493E+04	24
3.1150E-01	-1.2859E+05	1.6414E+04	1.9741E+02	1.9741E+02	3.9518E+03	5.4408E+04	25
3.4150E-01	-1.3407E+05	1.8421E+04	2.1984E+02	2.1984E+02	4.2431E+03	2.0736E+04	26
3.6650E-01	-4.4532E+04	1.9904E+04	2.3448E+02	2.3448E+02	4.1980E+03	2.1858E+04	27
3.9150E-01	-5.4222E+04	2.1155E+04	2.5470E+02	2.5470E+02	1.5932E+03	1.4790E+04	28
4.1650E-01	-5.4827E+04	2.2766E+04	2.7445E+02	2.7044E+02	2.9427E+01	7.0708E+03	29
4.4150E-01	-5.2028E+04	2.4157E+04	2.8496E+02	2.8694E+02	2.5267E+03	2.5857E+04	30
4.6650E-01	-4.5427E+04	2.5217E+04	3.0317E+02	3.0317E+02	-1.1115E+01	-4.7413E+03	31

RUN NO. A= 11 M= 60LBM/SQFT-HR X=14.000INCHES REYNOLDS NUMBER = 8.533$_1$E+05

FREE STREAM PROPERTIES PS=4.0761 PT=7.6500 T=110.12 UINF= 121.944 FT/SEC RHO= .0668$_1$56 LBM/CUBICFT

THETA= .539$_1$7E-01 DELTA*= .80641E-01 DELTA= .35585E+00 UTAU= 0

Y INCHES	U/UINF	V	T/TINF	MU*DU/DY	DU/DY	ALPHA	BETA	Y/DELTA	
0	0	0	1.0000E+00	1.1009E+00	8.8657E+04	0	0	0	1
6.500nE-03	3.573$_1$E-01	3.8115E-03	1.0000E+00	5.6647E-01	4.5635E+04	1.3215E-03	4.1681E-04	1.8277E-02	2
7.500nE-03	3.8712E-01	4.3979E-03	1.0000E+00	4.8436E-01	3.9017E+04	1.4965E-03	5.4654E-04	2.108nE-02	3
8.500nE-03	4.1115E-01	4.9843E-03	1.0000E+00	3.8304E-01	3.0854E+04	2.0987E-03	7.1738E-04	2.3900E-02	4
9.500nE-03	4.3090E-01	5.5707E-03	1.0000E+00	2.7139E-01	2.1860E+04	2.5228E-03	8.0591E-04	2.5712E-02	5
1.150nE-02	4.5691E-01	6.7434E-03	1.0000E+00	1.0266E-01	1.4715E+04	3.4165E-03	1.291nE-03	3.2335E-02	6
1.350nE-02	4.734nE-01	7.9162E-03	1.0000E+00	1.3369E-01	1.0765E+04	4.3558E-03	1.7281E-03	3.7930E-02	7
1.750nE-02	5.006nE-01	1.0262E-02	1.0000E+00	1.0554E-01	8.5024E+03	6.3331E-03	2.4915E-03	4.9204E-02	8
2.250nE-02	5.2473E-01	1.3194E-02	1.0000E+00	8.112nE-02	6.5350E+03	9.0481E-03	4.033$_3$E-03	6.3269E-02	9
2.650nE-02	5.4219E-01	1.5539E-02	1.0000E+00	6.8729E-02	5.5364E+03	1.1133E-02	5.1993E-03	7.4512E-02	10
3.150nE-02	5.59Anf-01	1.8471E-02	1.0000E+00	5.7520E-02	4.6344E+03	1.3965E-02	6.7587E-03	8.8571E-02	11
4.150nE-02	5.894nE-01	2.433nE-02	1.0000E+00	4.874nE-02	3.9266E+03	1.8918E-02	1.0180E-02	1.1669E-01	12
5.150nE-02	6.1466E-01	3.0199E-02	1.0000E+00	4.202$_1$E-02	3.3857E+03	2.4213E-02	1.3970E-02	1.4481E-01	13
7.150nE-02	6.5773E-01	4.192nE-02	1.0000E+00	3.662nE-02	2.9504E+03	3.0720E-02	2.3571E-02	2.0104E-01	14
9.150nE-02	6.9539E-01	5.3654E-02	1.0000E+00	3.2811E-02	2.6433E+03	5.4358E-02	3.2483E-02	2.5720E-01	15
1.115nE-01	7.299nE-01	6.5382E-02	1.0000E+00	2.9514E-02	2.4100E+03	7.0066E-02	4.268nE-02	3.1351E-01	16
1.315nE-01	7.615nE-01	7.7110E-02	1.0000E+00	2.7130E-02	2.1863E+03	9.4795E-02	5.4160E-02	3.6975E-01	17
1.515nE-01	7.901nE-01	8.8837E-02	1.0000E+00	2.5557E-02	2.0589E+03	1.0450E-01	6.0904E-02	4.259nE-01	18
1.715nE-01	8.176$_1$E-01	1.0054E-01	1.0000E+00	2.4311E-02	2.1197E+03	1.2318E-01	8.492nE-02	4.8222E-01	19
1.915nE-01	8.451nE-01	1.1229E-01	1.0000E+00	2.404nE-02	1.9367E+03	1.4287E-01	1.0134E-01	5.384nE-01	20
2.165nE-01	8.8085E-01	1.2695E-01	1.0000E+00	2.3334E-02	1.879nE+03	1.4881E-01	1.0369E-01	6.0879E-01	21
2.415nE-01	9.0463E-01	1.4161E-01	1.0000E+00	2.0364E-02	1.6405E+03	1.8433E-01	1.4834E-01	6.7904E-01	22
2.615nE-01	9.3548E-01	1.5334E-01	1.0000E+00	2.0324E-02	1.6371E+03	2.1936E-01	1.4954E-01	7.3528E-01	23
2.915nE-01	9.5559E-01	1.7093E-01	1.0000E+00	1.2718E-02	1.0243E+03	2.5562E-01	2.038nE-01	8.1963E-01	24
3.115nE-01	9.7517E-01	1.8266E-01	1.0000E+00	1.1579E-02	9.3224E+02	2.8076E-01	2.281nE-01	8.7587E-01	25
3.415nE-01	9.8607E-01	2.0025E-01	1.0000E+00	5.6579E-03	4.5576E+02	3.1977E-01	2.4641E-01	9.6022E-01	26
3.665nE-01	9.9285E-01	2.149$_1$E-01	1.0000E+00	3.9429E-03	3.1762E+02	3.5327E-01	2.0957E-01	1.0305E+00	27
3.915nE-01	9.9712E-01	2.2957E-01	1.0000E+00	2.2664E-03	1.8421E+02	3.8737E-01	3.137nE-01	1.100nE+00	28
4.165nE-01	9.9918E-01	2.4423E-01	1.0000E+00	1.0198E-03	8.2132E+01	4.2261E-01	3.4867E-01	1.1711E+00	29
4.415nE-01	1.0001E+00	2.5889E-01	1.0000E+00	2.9446E-04	2.3721E+01	4.5832E-01	4.0437E-01	1.2414E+00	30
4.665nE-01	1.0000E+00	2.7355E-01	1.0000E+00	-4.834nE-05	-3.8943E+00	4.9467E-01	4.4072E-01	1.3117E+00	31

THE MAX SHEAR AT POINT 13 IS CF/CFM = 3.65898E+00

	Y/DELTA	(UMAX-U)/UTMAX	EPST/UTMAX*DELTA	Y*MAX	U*MAX	CF/2
	0	2.4546E+01	0	0	0	6.1880E-04
1	1.8277E-02	1.9418E+01	2.4158E-03	1.3918E+01	9.1278E+00	1.1498E-03
2	2.1*98E-02	1.4636E+01	3.87.0E-03	1.6A59E+01	9.A895E+00	1.2004E-03
3	2.3A20E-02	1.*8A8E+01	5.8975E-03	1.8791E+01	1.0479E+01	1.2548E-03
4	2.6712E-02	1.453AE+01	5.A788E-03	2.0543E+01	1.1018E+01	1.2951E-03
5	3.2135E-02	1.2874E+01	6.7529E-03	2.4474E+01	1.1479E+01	1.3438E-03
6	3.7090E-02	1.1452E+01	7.2219E-03	2.8807E+01	1.2097E+01	1.3793E-03
7	4.9216E-02	1.2755E+01	1.5922E-02	3.7472E+01	1.2790E+01	1.4176E-03
8	6.3295E-02	1.2141E+01	2.1264E-02	4.8178E+01	1.3465E+01	1.4518E-03
9	7.4512E-02	1.1695E+01	2.5574E-02	5.6743E+01	1.3861E+01	1.4749E-03
10	8.8571E-02	1.1250E+01	3.0900E-02	6.7449E+01	1.4299E+01	1.4941E-03
11	1.1648E-01	1.0488E+01	3.7107E-02	8.8941E+01	1.4897E+01	1.5231E-03
12	1.4491E-01	9.*437E+00	4.3368E-02	1.1072E+02	1.5709E+01	1.5324E-03
13	2.01*4E-01	8.743AE+00	4.9562E-02	1.5510E+02	1.6869E+01	1.5206E-03
14	2.5728E-01	7.7814E+00	5.4405E-02	1.9498E+02	1.7764E+01	1.5033E-03
15	3.1391E-01	6.*977E+00	5.7852E-02	2.3A15E+02	1.8468E+01	1.4563E-03
16	3.6A78E-01	6.0887E+00	6.0472E-02	2.8157E+02	1.9454E+01	1.3703E-03
17	4.259BE-01	5.3885E+00	6.2904E-02	3.2448E+02	2.0119AE+01	1.2879E-03
18	4.8222E-01	4.A592E+00	6.5414E-02	3.6729E+02	2.0887E+01	1.1818E-03
19	5.3846E-01	3.9314E+00	6.7856E-02	4.1605E+02	2.1614E+01	1.0888E-03
20	6.0A75E-01	3.A439E+00	6.8456E-02	4.6358E+02	2.2502E+01	9.1188E-04
21	6.7014E-01	2.A363E+00	7.1458E-02	5.1711E+02	2.3109E+01	7.8954E-04
22	7.35*8E-01	1.A228E+00	7.6217E-02	5.5993E+02	2.3977E+01	6.1858E-04
23	8.1AA3E-01	1.1345E+00	8.6568E-02	6.2417E+02	2.4411E+01	3.9879E-04
24	8.7587E-01	8.1427E-01	9.1216E-02	6.6A98E+02	2.4911E+01	3.0361E-04
25	9.6082E-01	1.*592E-01	9.4356E-02	7.3*33E+02	2.5196E+01	1.6336E-04
26	1.03*5E+00	1.A242E-01	2.6779E-02	7.8478E+02	2.5345E+01	8.8738E-05
27	1.1*88E+00	7.*594E-02	1.8419E-02	8.3879E+02	2.5473E+01	3.9468E-05
28	1.1711E+00	2.*885E-02	1.5162E-02	8.9*AE+02	2.5526E+01	1.2902E-05
29	1.2414E+00	-3.4983E-03	2.5579E-02	9.4*A6E+02	2.5540E+01	6.3321E-06
30	1.3117E+00	0	0	9.9A*8E+02	2.554AE+01	0
31						

(CFMAX - CFWALL)/2 = 1.1136E-03

(CFMAX - CFWALL)/CFMAX = 7.2670E-01

(CFMAX - CFWALL)/CFWALL = 2.6590E+00

STOP

PROBLEM TOTALS 2108(181415 4 02AUG65 .04HRS 5?PP 00CARDS E

PROBLEM TOTALS 2140(137815 5 02AUG65 .00HRS 0PP 00CARDS

MASS= .4073000E+02 WRT= INCHES G= .2381517E-02 ZETA= .4170418E+01

Y/DELTA	M0	CF/2	EPSILON T	EPSILON I	CF/CFM	E-T/M	E-D/D12	SO	
0	0	4.1987E-04	0	0	1.0000E+00	0	0	0	1
0.5000E-03	1.5377E+02	1.1494E-04	2.4841E-05	-8.7225E-04	2.7455E+00	2.8812E+00	-1.1407E+00	0	2
7.5000E-03	4.0410E+02	1.2094E-04	1.8588E-05	-1.0488E-03	2.8877E+00	2.6419E+00	-1.1963E+00	0	3
8.5000E-03	4.8262E+02	1.2544E-04	4.8090E-05	-1.2629E-03	2.9941E+00	2.9207E+00	-1.1441E+00	0	4
9.5000E-03	5.1705E+02	1.2951E-04	5.8410E-05	-1.4598E-03	3.0924E+00	2.9456E+00	-1.0490E+00	0	5
1.1500E-02	6.2590E+02	1.3434E-04	8.8033E-05	-1.8881E-03	3.2884E+00	2.9531E+00	-2.1959E+00	0	6
1.3500E-02	7.3476E+02	1.3721E-04	1.2960E-04	-1.7624E-03	3.2706E+00	1.8120E+00	-2.9318E+00	0	7
1.7500E-02	9.5244E+02	1.4174E-04	1.6439E-04	-1.8519E-03	3.3850E+00	1.9243E+00	-2.8079E+00	0	8
2.2500E-02	1.2244E+03	1.4514E-04	2.1003E-04	-1.9039E-03	3.4665E+00	1.9465E+00	-2.8749E+00	0	9
2.6500E-02	1.4427E+03	1.4740E-04	2.4265E-04	-1.9209E-03	3.5217E+00	2.0159E+00	-2.8008E+00	0	10
3.1500E-02	1.7144E+03	1.4941E-04	2.1783E-04	-1.9520E-03	3.5679E+00	2.9405E+00	-2.8394E+00	0	11
4.1500E-02	2.2587E+03	1.5201E-04	3.8169E-04	-1.9704E-03	3.6297E+00	3.0740E+00	-2.8624E+00	0	12
5.1500E-02	2.8029E+03	1.5324E-04	4.4629E-04	-1.9838E-03	3.6599E+00	3.0953E+00	-2.8799E+00	0	13
7.1500E-02	3.8915E+03	1.5294E-04	5.1113E-04	-1.9921E-03	3.6523E+00	4.1177E+00	-2.8885E+00	0	14
9.1500E-02	4.9800E+03	1.5001E-04	5.5961E-04	-1.9968E-03	3.5825E+00	4.0083E+00	-2.8967E+00	0	15
1.1150E-01	6.0688E+03	1.4581E-04	5.9332E-04	-1.9994E-03	3.4831E+00	4.7798E+00	-2.4888E+00	0	16
1.3150E-01	7.1576E+03	1.4791E-04	6.2202E-04	-2.0028E-03	3.2936E+00	5.0110E+00	-2.4834E+00	0	17
1.5150E-01	8.2459E+03	1.2875E-04	6.1654E-04	-2.0019E-03	3.0743E+00	4.9469E+00	-2.4824E+00	0	18
1.7150E-01	9.3340E+03	1.1812E-04	5.4042E-04	-1.9920E-03	2.8205E+00	4.4261E+00	-2.4914E+00	0	19
1.9150E-01	1.0421E+04	1.0680E-04	5.4368E-04	-1.9949E-03	2.5500E+00	4.4799E+00	-2.4934E+00	0	20
2.1650E-01	1.1783E+04	9.1104E-04	4.7785E-04	-1.9891E-03	2.1759E+00	3.8498E+00	-2.4884E+00	0	21
2.4150E-01	1.3144E+04	7.8954E-04	4.2442E-04	-1.9834E-03	1.8942E+00	3.4953E+00	-2.5924E+00	0	22
2.6150E-01	1.4232E+04	6.1854E-04	3.7253E-04	-1.9804E-03	1.6778E+00	3.4011E+00	-2.4857E+00	0	23
2.9150E-01	1.5849E+04	5.0079E-04	3.7415E-04	-2.0189E-03	9.3312E-01	3.4783E+00	-2.4249E+00	0	24
3.1150E-01	1.6954E+04	3.0361E-04	3.2109E-04	-2.0214E-03	7.2496E-01	2.9807E+00	-2.4284E+00	0	25
3.4150E-01	1.8586E+04	1.6334E-04	2.9339E-04	-2.0508E-03	3.9806E-01	2.8469E+00	-2.4668E+00	0	26
3.6650E-01	1.9947E+04	8.0718E-05	2.7945E-04	-2.0509E-03	2.1188E-01	2.8198E+00	-2.4782E+00	0	27
3.9150E-01	2.1308E+04	3.5408E-05	1.8846E-04	-2.0806E-03	8.4527E-02	1.4263E+00	-2.4899E+00	0	28
4.1650E-01	2.2668E+04	1.2992E-05	1.5996E-04	-2.0799E-03	3.1022E-02	1.2584E+00	-2.4992E+00	0	29
4.4150E-01	2.4029E+04	4.3301E-06	2.6318E-04	-2.0790E-03	1.5115E-02	2.1196E+00	-2.704AE+00	0	30
4.6650E-01	2.5390E+04	0	0	-2.0818E-03	0	0	-2.7071E+00	0	31

AR= .6702719BE+02 BB=-.2177047BE+00 BARRA CAL= 0

Y/DELTA	ET/(UT*DELTA)	EM/NU-0	ET/NU-MOM	E-T/MU	
0	0	1.3141E-01	0	0	1
1.0277E-02	4.6195E-03	5.9657E-02	1.0787E-01	2.8819E+00	2
2.1088E-02	5.6830E-03	4.8981E-02	1.2278E-01	2.4610E+00	3
2.3988E-02	7.4553E-03	2.3321E-02	1.2473E-01	3.2297E+00	4
2.6712E-02	1.0862E-02	1.9007E-02	1.1037E-01	4.7050E+00	5
3.2339E-02	1.6743E-02	2.2725E-02	1.0887E-01	7.2531E+00	6
3.7959E-02	2.3374E-02	4.9777E-02	1.0076E-01	1.0120E+01	7
4.9284E-02	3.0570E-02	1.4391E-01	1.0967E-01	1.3245E+01	8
6.3265E-02	4.0731E-02	1.9094E-01	1.0889E-01	1.7649E+01	9
7.4512E-02	4.8843E-02	1.9855E-01	2.1751E-01	2.1139E+01	10
8.0971E-02	5.9106E-02	3.7384E-01	2.9727E-01	2.9604E+01	11
1.1669E-01	7.0986E-02	8.7354E-01	3.7833E-01	3.0749E+01	12
1.4401E-01	8.2994E-02	1.9731E-04	9.8238E-01	3.9699E+01	13
2.0104E-01	9.5053E-02	4.1104E-04	8.4382E-01	4.1177E+01	14
2.5720E-01	1.040 E-01	9.5382E-04	1.2381E-04	4.9004E+01	15
3.1351E-01	1.1034E-01	6.2340E-04	1.8762E-04	4.7798E+01	16
3.6975E-01	1.1567E-01	7.0983E-04	2.1151E-04	5.011AE+01	17
4.2598E-01	1.1466E-01	6.4737E-04	2.0437E-04	4.9660E+01	18
4.8222E-01	1.0217E-01	1.127AE-04	3.4878E-04	4.4261E+01	19
5.3846E-01	1.0111E-01	1.199AE-04	3.0733E-04	4.3799E+01	20
6.0075E-01	8.8864E-02	1.4669E-04	4.0293E-04	3.849AE+01	21
6.7004E-01	7.9300E-02	4.422'E-04	9.3928E-04	3.4359E+01	22
7.3928E-01	6.9277E-02	2.2742E-04	4.2628E-04	3.0011E+01	23
8.1963E-01	6.9950E-02	2.4451E-01	4.0693E-04	3.0307E+01	24
8.7587E-01	5.9711E-02	3.9514E-07	5.9608E-04	2.5867E+01	25
9.6022E-01	4.5717E-02	4.2431E-02	2.973AE-04	2 0460E+01	26
1.0305E-00	5.1224 -02	4.1989E-02	2.1868E-04	2.219AE+01	27
1.1008E-00	3.5233E-02	1.5932E-02	1.979AE-04	1.5269E+01	28
1.1711E-00	2.9003E-02	2.0407E-01	7.9708E-03	1.2584E+01	29
1.2414E-00	4.6928E-02	2.5267E-01	5.5667E-03	2.1194E+01	30
1.3117E-00	0	-1.1115E-01	-4.7815E-02	0	31

A= .9[illegible]E-02 R= .754-208E-01 CF/2= x5775502E-03 THETA AL= .6[illegible]39+A7E-01 X=10.00

Y/DEL A=	Y/DEL A	Y+	Y++	U/ALE	U+	U++	Y+U	(1-U)+	
			0	2.2560E+00	0	0	5.2870E+01	5.2870E-01	1
7.4n4E-02	1.7[illegible]E+02	7.2108E+01	7.2183E+00	2.2560E+00	1.7899E+01	1.7899E+01	3.4971E+01	3.4971E-01	2
8.553E-02	1.[illegible]4E+02	8.2495E+01	8.2495E+00	2.2560E+00	1.8944E+01	1.8946E+01	3.3924E+01	3.3924E-01	3
9.625E-02	2.2[illegible]4E+02	9.2807E+01	9.2807E+00	2.2560E+00	2.0417E+01	2.0417E+01	3.2459E+01	3.2459E-01	4
1.356E-01	2.4797E+02	1.0312E+02	1.0312E+01	2.2560E+00	2.1431E+01	2.1431E+01	3.1438E+01	3.1438E-01	5
1.2841E-01	2.9752E+02	1.2374E+02	1.2374E+01	2.2560E+00	2.3411E+01	2.3411E+01	2.9458E+01	2.9458E-01	6
1.484E-01	3.[illegible]1E+02	1.4437E+02	1.4437E+01	2.2560E+00	2.4491E+01	2.4491E+01	2.8378E+01	2.8378E-01	7
1.924E-01	4.4027E+02	1.8561E+02	1.8561E+01	2.2560E+00	2.6004E+01	2.6004E+01	2.6804E+01	2.6804E-01	8
2.459E-01	5.7024E+02	2.3717E+02	2.3717E+01	2.2560E+00	2.7434E+01	2.7434E+01	2.5435E+01	2.5435E-01	9
2.884E-01	6.[illegible]E+02	2.7842E+02	2.7842E+01	2.2560E+00	2.8156E+01	2.8156E+01	2.4713E+01	2.4713E-01	10
3.421E-01	7.9337E+02	3.2998E+02	3.2998E+01	2.2560E+00	2.9074E+01	2.9074E+01	2.3796E+01	2.3796E-01	11
4.490E-01	1.0413E+03	4.3310E+02	4.3310E+01	2.2560E+00	3.0688E+01	3.0688E+01	2.2181E+01	2.2181E-01	12
5.560E-01	1.2892E+03	5.3622E+02	5.3622E+01	2.2560E+00	3.2004E+01	3.2004E+01	2.0864E+01	2.0864E-01	13
7.698E-01	1.7851E+03	7.4245E+02	7.4245E+01	2.2560E+00	3.4107E+01	3.4107E+01	1.8762E+01	1.8769E-01	14
9.836E-01	2.2811E+03	9.4868E+02	9.4868E+01	2.2560E+00	3.5937E+01	3.5937E+01	1.6933E+01	1.6933E-01	15
1.197E+00	2.7768E+03	1.1549E+03	1.1549E+02	2.2560E+00	3.7503E+01	3.7503E+01	1.5367E+01	1.5367E-01	16
1.411E+00	3.2727E+03	1.3612E+03	1.3612E+02	2.2560E+00	3.9066E+01	3.9066E+01	1.3804E+01	1.3804E-01	17
1.625E+00	3.7688E+03	1.5674E+03	1.5674E+02	2.2560E+00	4.0463E+01	4.0463E+01	1.2406E+01	1.2406E-01	18
1.839E+00	4.2644E+03	1.7736E+03	1.7736E+02	2.2560E+00	4.1851E+01	4.1851E+01	1.1018E+01	1.1018E-01	19
2.052E+00	4.7602E+03	1.9799E+03	1.9799E+02	2.2560E+00	4.3141E+01	4.3141E+01	9.7286E+00	9.7286E-02	20
2.320E+00	5.4491E+03	2.2377E+03	2.2377E+02	2.2560E+00	4.4688E+01	4.4688E+01	8.1017E+00	8.1017E-02	21
2.587E+00	5.9999E+03	2.4955E+03	2.4955E+02	2.2560E+00	4.6032E+01	4.6032E+01	6.8373E+00	6.8373E-02	22
2.854E+00	6.6197E+03	2.7533E+03	2.7533E+02	2.2560E+00	4.7339E+01	4.7339E+01	5.5310E+00	5.5310E-02	23
3.122E+00	7.2398E+03	3.0111E+03	3.0111E+02	2.2560E+00	4.8578E+01	4.8578E+01	4.2916E+00	4.2916E-02	24
3.389E+00	7.8594E+03	3.2689E+03	3.2689E+02	2.2560E+00	4.9725E+01	4.9725E+01	3.1451E+00	3.1451E-02	25
3.656E+00	8.4792E+03	3.5267E+03	3.5267E+02	2.2560E+00	5.0724E+01	5.0724E+01	2.1461E+00	2.1461E-02	26
3.924E+00	9.0990E+03	3.7845E+03	3.7845E+02	2.2560E+00	5.1524E+01	5.1524E+01	1.3458E+00	1.3458E-02	27
4.191E+00	9.7188E+03	4.0422E+03	4.0422E+02	2.2560E+00	5.2112E+01	5.2112E+01	7.5737E-01	7.5737E-03	28
4.458E+00	1.0339E+04	4.3000E+03	4.3000E+02	2.2560E+00	5.2599E+01	5.2599E+01	2.7081E-01	2.7081E-03	29
4.726E+00	1.0959E+04	4.5578E+03	4.5578E+02	2.2560E+00	5.2760E+01	5.2760E+01	1.0962E-01	1.0962E-03	30
4.993E+00	1.1579E+04	4.8156E+03	4.8156E+02	2.2560E+00	5.2862E+01	5.2862E+01	7.9009E-03	7.3809E-03	31
5.346E+00	1.239AE+04	5.1559E+03	5.1559E+02	2.2560E+00	5.2870E+01	5.2870E+01	0	0	32

Y	D2U/DY2	U+Y+	W2U*Y+	EM/NU-S	EM/NU-O	ET/MU-MOM	
0	8.8891E+07	0	0	0	1.4274E+03	0	1
7.0000E-03	-7.5591E+06	1.2920E+02	1.9350E+00	1.2049E+01	8.7858E+04	9.0715E+02	2
8.0000E-03	-2.1338E+07	1.5630E+02	1.0960E+00	1.9678E+01	7.0490E+03	1.2229E+03	3
9.0000E-03	-3.4523E+07	1.8949E+02	2.2512E+00	2.8144E+01	2.9614E+03	1.4975E+03	4
1.0000E-02	-7.1086E+07	2.2180E+02	2.0257E+00	2.4354E+00	3.3870E+02	1.8372E+03	5
1.2000E-02	-4.4080E+07	2.8969E+02	3.4410E+00	3.3317E+01	2.9845E+02	1.9417E+03	6
1.4000E-02	-2.3461E+07	3.9354E+02	4.2807E+00	4.1379E+01	2.9868E+02	1.9888E+03	7
1.8000E-02	-9.1122E+06	4.8378E+02	5.7477E+00	5.7204E+01	6.9803E+02	1.8242E+03	8
2.3000E-02	-4.8573E+06	6.9067E+02	7.7306E+00	7.7279E+01	8.2307E+02	1.8418E+03	9
2.7000E-02	-2.1250E+06	7.8393E+02	9.3139E+00	9.3134E+01	2.3894E+03	2.0866E+03	10
3.2000E-02	-1.0189E+06	9.9937E+02	1.1390E+01	1.1390E+01	8.2828E+03	2.7087E+03	11
4.2000E-02	-0.0011E+05	1.3291E+03	1.5791E+01	1.5794E+01	5.8851E+03	3.8285E+03	12
5.2000E-02	-5.5304E+05	1.7102E+03	2.0390E+01	2.0394E+01	8.8159E+03	4.8793E+03	13
7.2000E-02	-2.6394E+05	2.5321E+03	3.0087E+01	3.0087E+01	2.2203E+04	7.7466E+03	14
9.2000E-02	-1.4099E+05	3.4091E+03	4.0504E+01	4.0504E+01	4.0581E+04	1.1146E+04	15
1.1200E-01	-9.6681E+04	4.3313E+03	5.1461E+01	5.1461E+01	8.4565E+04	1.5024E+04	16
1.3200E-01	-6.4254E+04	5.1175E+03	6.3177E+01	6.3177E+01	1.6744E+05	1.9057E+04	17
1.5210E-01	-6.0741E+04	6.1421E+03	7.9352E+01	7.9359E+01	1.5339E+05	2.4755E+04	18
1.7200E-01	-5.1654E+04	7.4229E+03	8.8192E+01	8.8199E+01	1.9004E+05	3.0771E+04	19
1.9200E-01	-7.1397E+04	8.5414E+03	1.0148E+02	1.0149E+02	8.2639E+04	3.5704E+04	20
2.1700E-01	-6.3640E+04	8.9997E+03	1.1881E+02	1.1881E+02	8.0537E+04	4.1092E+04	21
2.4200E-01	-4.7008E+04	1.1487E+04	1.3648E+02	1.3648E+02	1.1444E+05	4.7078E+04	22
2.6700E-01	-3.4734E+04	1.3034E+04	1.5485E+02	1.5488E+02	1.0673E+05	5.4190E+04	23
2.9200E-01	-5.4230E+04	1.4627E+04	1.7379E+02	1.7379E+02	8.3149E+04	6.2011E+04	24
3.1700E-01	-7.9662E+04	1.6254E+04	1.9312E+02	1.9319E+02	2.1113E+04	6.6807E+04	25
3.4200E-01	-9.6532E+04	1.7888E+04	2.1253E+02	2.1259E+02	8.1794E+03	6.4238E+04	26
3.6700E-01	-9.8338E+04	1.9499E+04	2.3167E+02	2.3167E+02	4.0287E+03	5.8145E+04	27
3.9200E-01	-1.0415E+05	2.1061E+04	2.5027E+02	2.5027E+02	1.3822E+03	4.8092E+04	28
4.1700E-01	-1.0214 E+05	2.2614E+04	2.6872E+02	2.6872E+02	5.3101E+02	3.6847E+04	29
4.4200E-01	-7.3984 E+04	2.4047E+04	2.8570E+02	2.8570E+02	3.3758E+01	1.4414E+04	30
4.6700E-01	-2.9324E+04	2.5457E+04	3.0245E+02	3.0244E+02	1.2534E+01	5.2404E+03	31
5.0000E-01	-1.0068E+04	2.7259E+04	3.2387E+02	3.2387E+02	2.0654E-02	8.1427E+02	32

RUN NO. A- 12 M= ADLRM/SQFT-HR X=18.001NCHES REYNOLDS NUMBER = 1.0686E+06

FREE STREAM PROPERTIES PS=4.0020 PT=3.6210 T=110.12 UINF= 121.437 FT/SEC RHO= .0068733 LBM/CUBICFT

THETA= .4303BE-01 DELTA*= .9352AE-01 DELTA= .4033AE+00 UTAU= 0

Y INCHES	U/UINF		T/TINF	MU*DU/DY	DU/DY	ALPHA	BETA	Y/DELTA	
0	0	0	1.0000E+00	6.445BE-01	5.1928E+04	0	0	0	1
7.0000E-03	3.3854E-01	4.0874E+02	1.0000E+00	4.5159E-01	3.6375E+04	1.3350E-03	3.0093E-04	1.7355E-02	2
8.0000E-03	3.5835E-01	4.6715E+02	1.0000E+00	4.2394E-01	3.4153E+04	1.4870E-03	5.1393E-04	1.9834E-02	3
9.0000E-03	3.8617E-01	5.2555E+02	1.0000E+00	4.376AE-01	3.5253E+04	2.0631E-03	6.8643AE-04	2.2314E-02	4
1.0000E-02	4.0534E-01	5.8394E+02	1.0000E+00	3.4104E-01	2.7476E+04	2.4831E-03	8.1324E-04	2.4793E-02	5
1.2000E-02	4.4281E-01	7.0073E+02	1.0000E+00	2.3754E-01	1.9137E+04	3.3199E-03	1.1775E-03	2.9752E-02	6
1.4000E-02	4.6323E-01	8.1752E+02	1.0000E+00	1.5744E-01	1.2684E+04	4.2317E-03	1.5889E-03	3.4710E-02	7
1.8000E-02	4.929BE-01	1.0511E+03	1.0000E+00	1.1129E-01	8.9605E+03	6.1749E-03	2.3194E-03	4.4627E-02	8
2.3000E-02	5.1891E-01	1.3431E+03	1.0000E+00	7.7259E-02	6.2236E+03	8.7537E-03	3.8239E-03	5.7024E-02	9
2.7000E-02	5.3256E-01	1.5764E+03	1.0000E+00	6.3509E-02	5.1163E+03	1.0906E-02	4.0541E-03	6.6941E-02	10
3.2000E-02	5.4991E-01	1.8686E+03	1.0000E+00	5.0699E-02	4.7282E+03	1.3696E-02	6.4648E-03	7.9337E-02	11
4.2000E-02	5.8049E-01	2.4524E+03	1.0000E+00	4.8154E-02	3.8794E+03	1.9555E-02	9.7812E-03	1.0413E-01	12
5.2000E-02	6.0537E-01	3.0365E+03	1.0000E+00	4.0004E-02	3.2228E+03	2.5754E-02	1.3454E-02	1.2892E-01	13
7.2000E-02	6.4512E-01	4.2044E+03	1.0000E+00	3.3242E-02	2.6780E+03	3.9036E-02	2.1769E-02	1.7851E-01	14
9.2000E-02	6.7973E-01	5.3723E+03	1.0000E+00	2.9219E-02	2.3538E+03	5.3367E-02	3.1264E-02	2.2810E-01	15
1.1200E-01	7.0935E-01	6.5401E+03	1.0000E+00	2.6574E-02	2.1408E+03	6.8479E-02	4.1905E-02	2.7768E-01	16
1.3200E-01	7.3891E-01	7.7080E+03	1.0000E+00	2.5419E-02	2.0473E+03	8.4931E-02	5.3677E-02	3.2727E-01	17
1.5200E-01	7.6534E-01	8.8759E+03	1.0000E+00	2.3779E-02	1.9152E+03	1.0211E-01	6.4604E-02	3.7685E-01	18
1.7200E-01	7.9159E-01	1.0044E+04	1.0000E+00	2.3078E-02	1.8592E+03	1.2021E-01	8.0696E-02	4.2644E-01	19
1.9200E-01	8.1599E-01	1.1212E+04	1.0000E+00	2.1544E-02	1.7356E+03	1.3922E-01	9.8987E-02	4.7602E-01	20
2.1700E-01	8.4525E-01	1.2672E+04	1.0000E+00	1.9784E-02	1.5940E+03	1.6423E-01	1.1677E-01	5.3801E-01	21
2.4200E-01	8.7068E-01	1.4131E+04	1.0000E+00	1.8174E-02	1.4641E+03	1.9061E-01	1.3940E-01	5.9999E-01	22
2.6700E-01	8.9538E-01	1.5591E+04	1.0000E+00	1.7488E-02	1.4089E+03	2.1831E-01	1.6387E-01	6.6197E-01	23
2.9200E-01	9.1883E-01	1.7051E+04	1.0000E+00	1.6399E-02	1.3210E+03	2.4734E-01	1.9022E-01	7.2395E-01	24
3.1700E-01	9.4051E-01	1.8511E+04	1.0000E+00	1.4707E-02	1.1848E+03	2.7767E-01	2.1844E-01	7.8594E-01	25
3.4200E-01	9.5941E-01	1.9971E+04	1.0000E+00	1.2184E-02	9.8170E+02	3.0926E-01	2.4847E-01	8.4792E-01	26
3.6700E-01	9.7454E-01	2.1431E+04	1.0000E+00	9.7439E-03	7.8492E+02	3.4201E-01	2.8014E-01	9.0990E-01	27
3.9200E-01	9.8567E-01	2.2891E+04	1.0000E+00	7.0874E-03	5.7093E+02	3.7584E-01	3.1332E-01	9.7188E-01	28
4.1700E-01	9.9488E-01	2.4350E+04	1.0000E+00	4.3444E-03	3.4998E+02	4.1061E-01	3.4776E-01	1.0339E+00	29
4.4200E-01	9.9793E-01	2.5810E+04	1.0000E+00	1.6374E-03	1.3189E+02	4.4621E-01	3.8323E-01	1.0959E+00	30
4.6700E-01	9.9986E-01	2.7270E+04	1.0000E+00	6.3480E-04	5.1147E+01	4.8253E-01	4.1950E-01	1.1579E+00	31
5.0000E-01	1.0000E+00	2.9197E+04	1.0000E+00	3.6767E-05	2.9620E+00	5.3147E-01	4.6843E-01	1.2394E+00	32